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v. 1

YUBA COUNTY GENERAL PLAN

VOLUME I

ENVIRONMENTAL SETTING AND BACKGROUND



Submitted to:
Department of Planning and Building Services
Yuba County
938 14th Street
Marysville, CA 95901
(916)741-6419

Prepared by:
QUAD Consultants
2530 J Street, Suite 302
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In Association With:

Brown-Buntin Associates, Inc.
kdAnderson Transportation Engineers
Youngdahl and Associates, Inc.

Updated
May, 1994

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YUBA COUNTY GENERAL PLAN

VOLUME I

ENVIRONMENTAL SETTING AND BACKGROUND

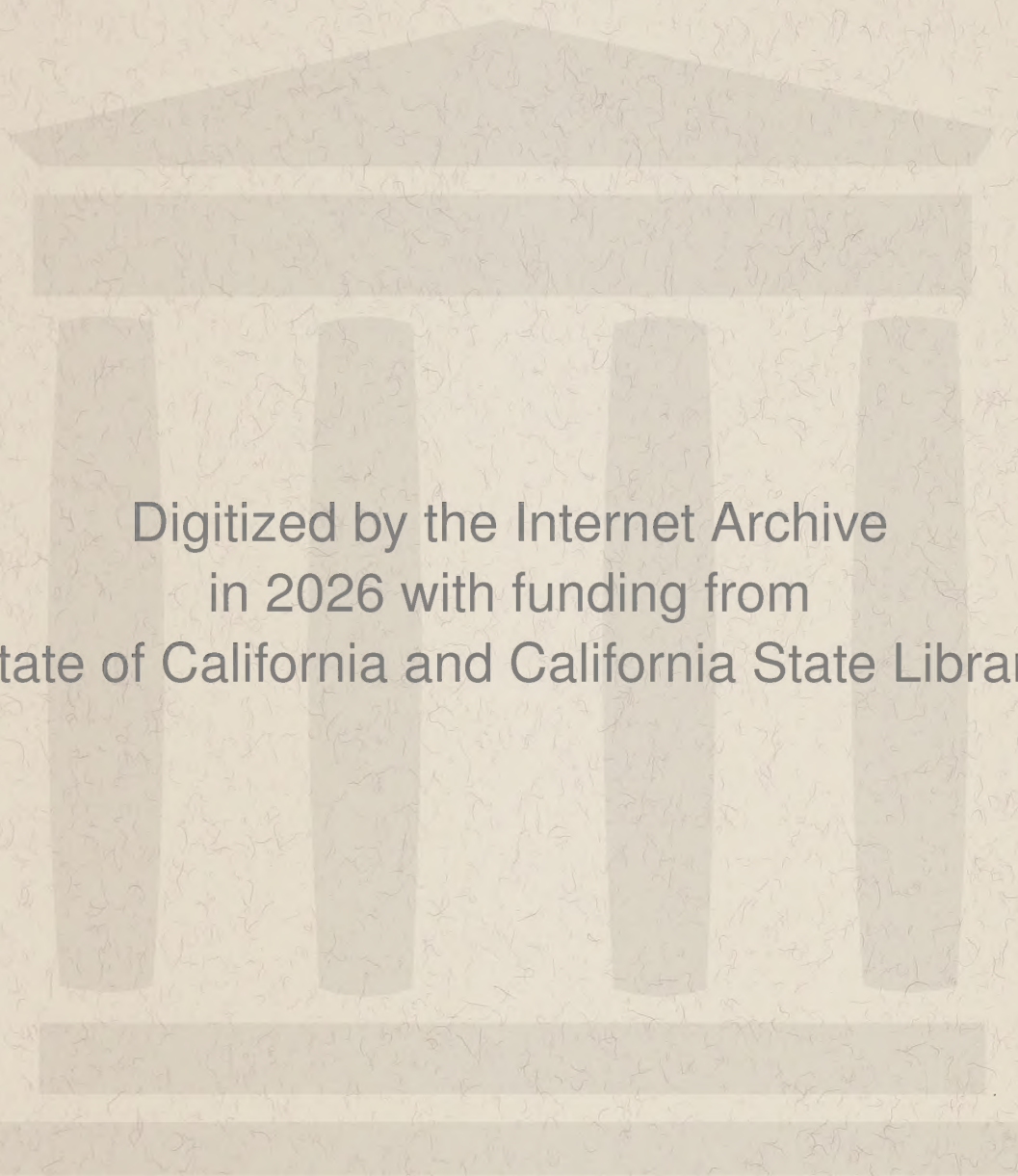


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SECTION ONE INTRODUCTION



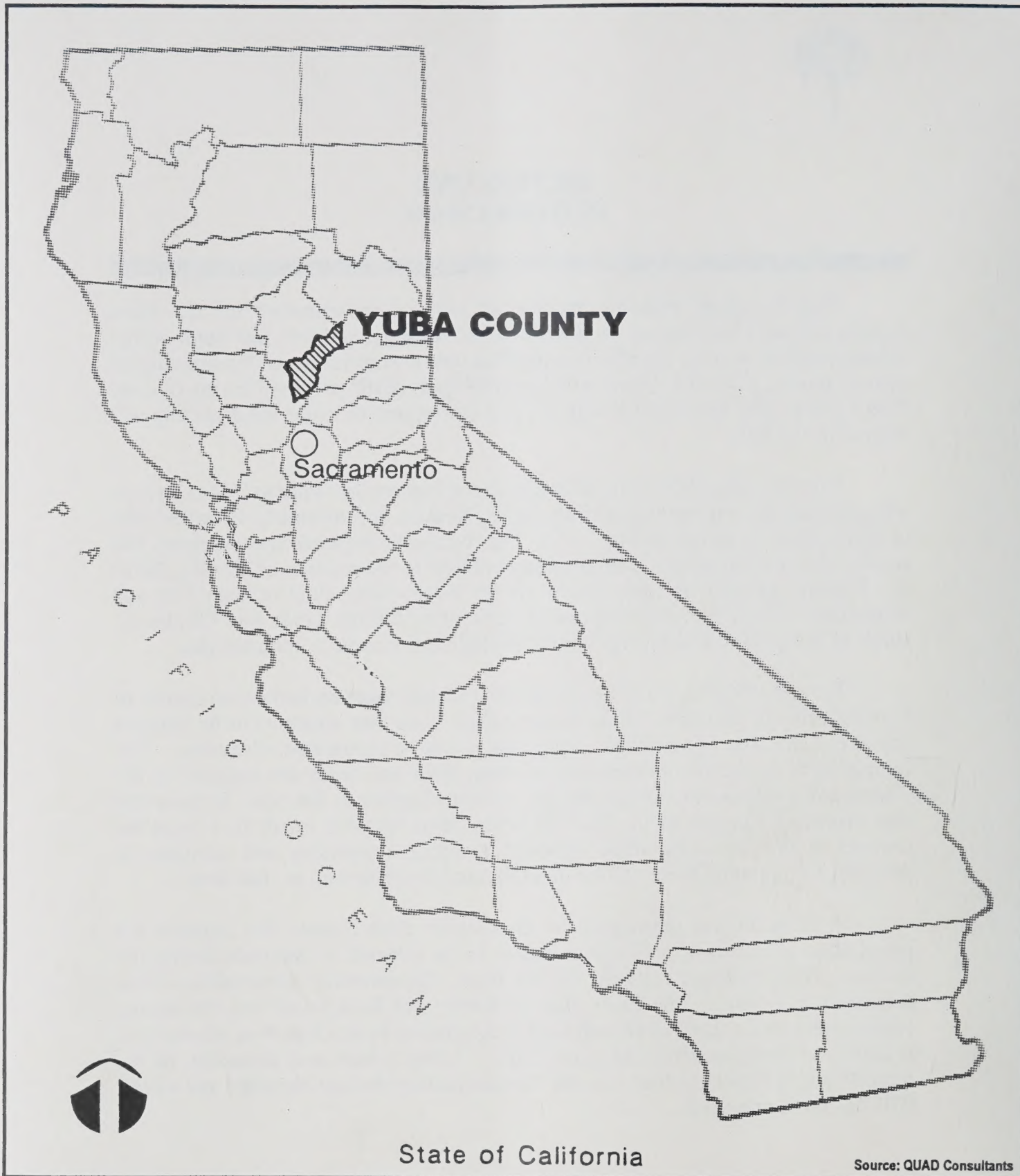
SECTION ONE INTRODUCTION

This document contains background information compiled for the Yuba County *General Plan Update*. It describes the existing conditions that apply to the subject areas to be addressed in the Plan, and also serves as the "environmental setting" portion of the Environmental Impact Report (EIR) prepared for the *General Plan Update*. The document is organized to correspond to major headings that will appear in the EIR.

Yuba County, California, is located in the eastern Sacramento Valley and the western foothills and mountains of the Sierra Nevada, approximately 45 miles north of Sacramento, as shown on Figure 1-1. The county encompasses approximately 640 square miles extending east from the Feather River to the counties of Nevada, Sierra and Plumas. Located in Yuba County are the incorporated cities of Marysville and Wheatland. The major unincorporated settlements include Linda and Olivehurst, south of Marysville, and several smaller foothill and mountain communities.

In June 1992, the Yuba County Board of Supervisors authorized an update of four elements of the *Yuba County General Plan*. The four elements to be updated are the *Land Use, Circulation, Open Space and Conservation* elements. The remaining three mandatory elements, *Housing, Noise and Safety* are assumed by the County to be sufficiently current and not in need of update at this time. In the event that proposed changes in the four elements being updated result in a need for changes in the remaining three elements to retain consistency and adequacy, a program for updating them will be prepared and implemented at that time.

A program was developed for the *General Plan Update* that entailed the preparation of a series of Working Papers to be released at intervals during the process. The first Paper released was the *Issues, Opportunities, Assumptions, Vision Statement and Goals*. The *Environmental Setting and Background* was the second Paper in this series. It was followed later in the process by an *Objectives, Alternatives, Policies and Implementation Measures* Paper. Upon review and discussion of the three Working Papers, a draft *General Plan* containing the four elements and a draft EIR has been prepared.





The Board of Supervisors appointed a General Plan Citizens Advisory Committee to work with the staff and the General Plan consultants. During the period of Plan development eight meetings were held with the Citizens Advisory Committee as well as a number of community workshops to solicit public comment and direction.

Because only four of the seven mandatory *General Plan* elements are being updated at this time, this document and the subsequent process rely, to an extent, on the content of the three remaining elements.



SECTION TWO
EARTH



SECTION TWO EARTH

2.1 PROJECT LOCATION AND DESCRIPTION

Yuba County occupies portions of the Great Valley and Sierra Nevada geomorphic provinces of California. The county encompasses approximately 640 square miles of land area extending eastward from the Feather River to a point several miles west of the Sierra Nevada crest and about three miles east of new Bullards Bar Reservoir at an approximate elevation of 3,200 feet (Townships 13 through 20 North, Ranges 3 through 8 East, Mount Diablo Base and Meridian).

2.2 TOPOGRAPHY

Three physiographic areas are identified within Yuba County (Figure 2-1). They are:

Valley Area

The valley area of Yuba County consists primarily of agricultural land use commencing from an elevation of 30 feet above mean sea level at the Feather River and extending easterly to the western Sierra Nevada foothill area at an elevation of approximately 250 feet above mean sea level.

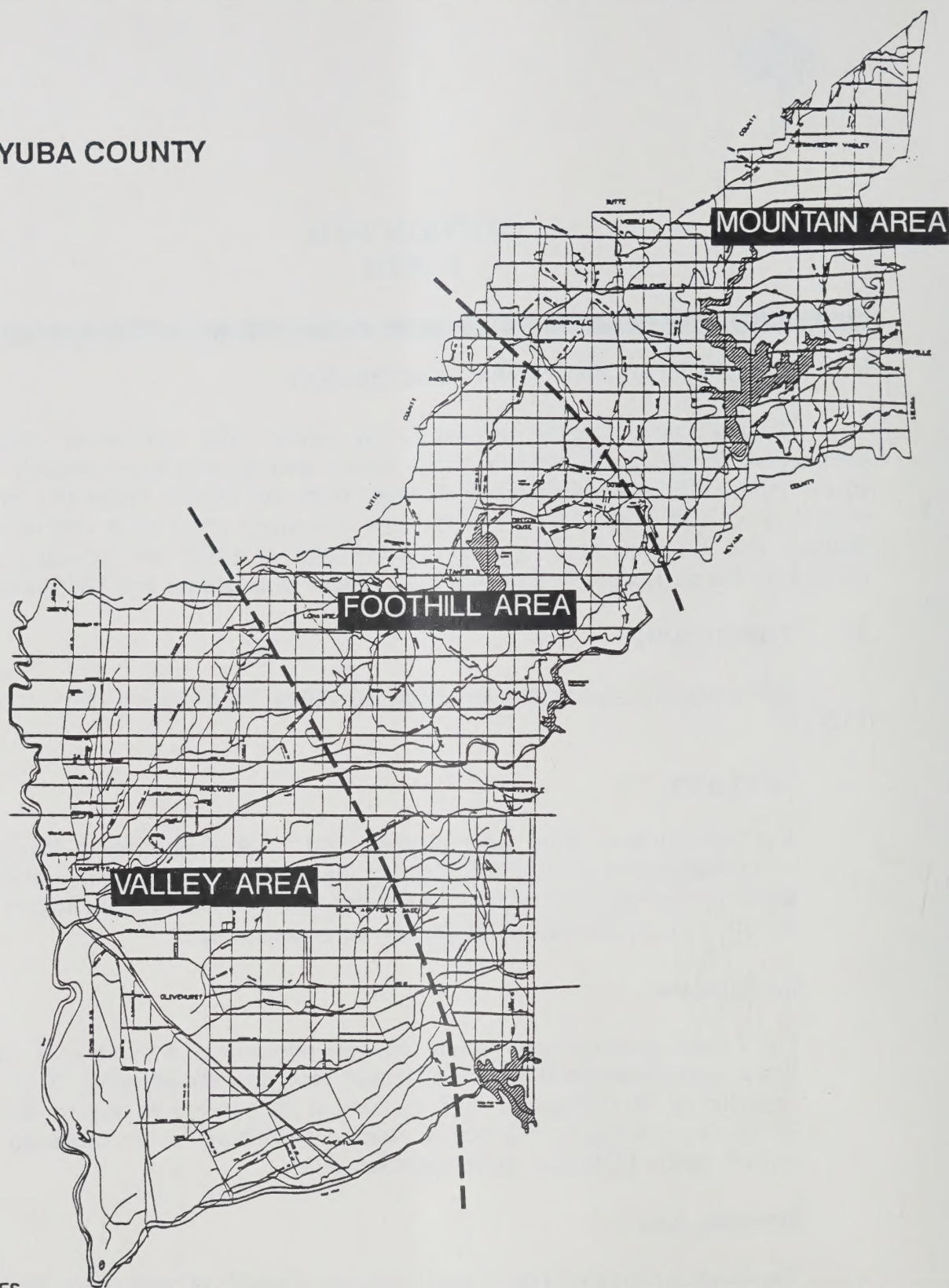
Foothill Area

The foothill area of Yuba County consists primarily of a mixture of open space, agricultural and rural residential land use commencing from an elevation of 250 feet above mean sea level at the base of the western Sierra foothill area rising to the Sierra Nevada Mountains at an elevation of approximately 1,600 feet above mean sea level.

Mountain Area

The mountain area of Yuba County consists primarily of open space, timber production and rural residential land use commencing from an elevation of

YUBA COUNTY



Source: Youngdahl and Associates

QUAD

PHYSIOGRAPHIC AREAS

**FIGURE
2-1**



approximately 1,600 feet above mean sea level at the top of the western Sierra foothill area to an elevation exceeding 4,800 feet above mean sea level in the northeast corner of the county.

2.3 GEOLOGY

2.3.1 Geologic Setting and History

Yuba County is underlain by Quaternary age alluvial deposits in the western portion of the County comprising the valley area; by Paleozoic and Mesozoic age metasediments and metavolcanic rocks in the foothill area; and by Paleozoic and Mesozoic age metasediments, metavolcanics and intrusive granitics partially covered by Tertiary age volcanic rocks in the mountain area. The Sierra Nevada block extends beneath the valley fill, overlain principally by Tertiary sedimentary formations derived from these and other rocks which are exposed in the Sierra Nevada to the east. The sedimentary rocks are of both marine and continental origin and are frequently interbedded with tuff-breccias. The principal aquifers in the valley area are composed of continental sediments of Pleistocene and Recent age. These consist of as much as 100 feet of Pleistocene sands and gravels overlain by up to 125 feet of Recent alluvial fan, flood plain, and stream channel deposits.

In the early Jurassic Period, Yuba County was near the margin of a shallow sea protected by an island-arc system located offshore. In late Jurassic time, the subducting Pacific Plate caused the accretion of island-arc volcanics onto the continental land mass. The Foothills Fault System is thought to mark the suture of the accreted island-arc volcanics and the paleo-continental margin. These compressional forces caused the Sierra Nevada to emerge as an extensive mountain system with shallow seas occupying the western half of Yuba County. Folding and faulting accompanied the late Jurassic mountain building as the Sierra Nevada composite batholith was intruded. The Jurassic sequence of plutonic rocks include mafic intrusives including gabbro and diorite accompanied by lenticular bodies of ultramafic rocks including peridotites and serpentinite in fault zones.

In the late Cretaceous Period, the seas had progressed eastward to cover the western portion of the County. The Foothills Fault System was more than 340 miles long (550 km) and over 12 miles wide (20 km). Uplift and tilting of



the bedrock continued in the Sierra Nevada exposing high-silica granodiorite and quartz monzonite. Rapid uplift since the early Tertiary of the Sierra Nevada tectonic block has continued to the present time.

The Sierra Nevada tectonic block is bounded by the frontal fault system on the east and the Coast Range boundary fault on the west. These boundary faults have had hundreds to thousands of meters of displacement during and since the early Tertiary Period (Wong, 1989). The seas were retreating from Yuba County during the Paleocene and Eocene Epochs. Inland, in eastern Yuba and in the Sierra Nevada, extrusive volcanic calc-alkalic rocks were emerging. By the Miocene Epoch, Yuba County had emerged from the shallow seas due to continued uplift and volcanic activity in the Sierra Nevada. The Sutter Buttes volcano covered slopes with tuff-breccia deposits from mud flows in the Pliocene. Several stages of glaciation occupied the Sierra Nevada during the Pleistocene Epoch which resulted in a thin blanket of coarse gravel in many depositional basins adjacent to the mountains. By the late Tertiary Period, alluvium developed from the weathering of continental metamorphic and igneous rocks was being deposited over the western portion of Yuba County, a part of the eastern margin of the Great Valley.

2.3.2 Valley Area Geologic Units

The western portion of Yuba County is covered by large alluvial fans of the Riverbank Formation (Figure 2-2 inserted separately at the back of this document) that appear to bury older alluvial fans of the Turlock Lake, Laguna and Mehrten Formations (Helley, 1895). The general geologic units shown on the Chico Sheet (1:250,000 scale, U.S.G.S.) in the valley area include Stream Channel Deposits (Qsc) and Fan Deposits (Qf) of the Great Valley Sequence; Plio-Pleistocene nonmarine rocks (Qp); Pliocene Volcanic, pyroclastic rocks ($\emptyset_v^p$); Oligocene Marine ($\emptyset$); Eocene nonmarine rocks (Ec); and Eocene volcanic basaltic rocks (Ev^b). A more detailed geologic description of the units can be found in the *Geologic Map of the Late Cenozoic Deposits of the Sacramento Valley and Northern Sierran Foothills* (Helley, 1985). The following discussion is Helley's descriptions of the Late Cenozoic deposits found in the valley area of Yuba County.



Qsc - Stream Channel Deposits (Holocene). Deposits of open, active stream channels without permanent vegetation. These deposits are being transported under modern hydrologic conditions; consequently they are light tan and gray unweathered, and usually in contact with modern surface waters.

Qa - Alluvial Deposits (Holocene). Deposits of unweathered gravel, sand and silt deposited by the present-day stream systems that drain the Sierra Nevada. Differentiated from older stream-channel deposits by position in modern channels.

Qmu - Modesto Formation Alluvial Deposits, upper member (Pleistocene). Unconsolidated, unweathered gravel, sand, silt and clay. The upper member forms terraces that are topographically the lowest of the two Modesto terraces. Soils at the top of the upper member have A and C soil horizon profiles, but unlike the lower member, they lack argillic B horizons. Deposits belonging to the upper member of the Modesto Formation are only a few meters thick and generally form a thin veneer deposited on older alluvial deposits. Radiocarbon age determinations on plant remains from the upper member at Tulare Lake suggest that the unit is between 12,000 and 26,000 years old. Thus the deposition of the upper member of the Modesto Formation appears to correspond with the Tioga glaciation in the Sierra Nevada.

Qml - Modesto Formation Alluvial Deposits, lower member (Pleistocene). Unconsolidated, slightly weathered gravel, sand, silt and clay. The lower member forms terraces that are topographically a few meters higher than those of the upper member. It forms alluvial fans along the main channel of the Feather River. Soils developed on the lower member contain an argillic B horizon, which is marked by a noticeable increase in clay content and a distinct red color.

Qru - Riverbank Formation, upper member (Pleistocene). Unconsolidated but compact, dark-brown to red alluvium composed of gravel, sand, silt and with minor clay. Topographically forms the lower of the two Riverbank terraces; forms dissected alluvial fans on the northwest and southeast sides of the Sacramento Valley with distinct and now abandoned distributary channels cut into the lower member and older deposits. The Riverbank members generally are separated vertically by about 9 feet (3 meters), but the lower



member of the Modesto may be more than 15 feet (5 meters) lower in elevation.

Qrl - Riverbank Formation, lower member (Pleistocene). Red semiconsolidated gravel, sand and silt. Comprises the higher of the two Riverbank terraces and remnants of dissected alluvial fans. This terrace is cut and backfilled into the Red Bluff and older alluvial deposits. Its surface is much more dissected than the upper member with several meters of local relief. Where eroded it also displays much stronger, almost maximal soil profiles with hues approaching a maximum Color of 2.5 YR as shown on the Munsell Soil Color Chart. Numerous small discontinuous outcrops of the lower member are buried partially by Holocene alluvial and basin deposits. The deposits of the lower member probably mark the ancient distal edge of the Riverbank fan. The deposits of the lower member were cut by a south-flowing ancient channel of the Feather River or Bear River, or both. Today, the Feather River departs from its due-south course below its confluence with the Bear and abruptly strikes southwesterly around the numerous outcrops of the lower member of the Riverbank.

Qb - Basin Deposits, undivided (Holocene). Fine-grained silt and clay derived from the same source as modern alluvium. The dark-gray to black deposits are the distal facies of the unit Qa. The undivided basin deposits produce rich and valuable farmland. Thickness varies from 1 or 2 meters along the valley perimeter to as much as 60 meters in the center of the valley.

Tla - Laguna Formation (Pliocene). Interbedded alluvial gravel, sand and silt. Pebbles and cobbles of quartz and metamorphic rock fragments generally dominate the gravels, but the matrix of the gravelly units and finer sediments are invariably arkosic. The Laguna is lithologically indistinguishable from the Turlock Lake Formation, but the Turlock Lake is more compact at the surface due to a preserved B₂ soil horizon. The Laguna, on the other hand, has had its former soil profiles stripped by erosion. In the Oroville area the Laguna is distinguished from the Turlock Lake because it contains the Nomlaki Tuff Member near its base. The Nomlaki Tuff Member of the Tuscan Formation is a white, light gray dacitic pumice tuff and pumice lapilli tuff and is not exposed at the surface in Yuba County.



2.3.3 Foothill Area Geologic Units

The foothill area of Yuba County is located on the western edge of the Sierra Nevada geomorphic province of California. Geologic units shown on the Chico Sheet in the foothill area include Pliocene Volcanic rocks (Pv^b); Eocene nonmarine rocks (Ec); and Eocene volcanic basaltic rocks (Ev^b); Tertiary nonmarine (Tc); Mesozoic granitic rocks (Mzg); Mesozoic mafic intrusive rocks (Mzb); Mesozoic ultramafic rocks (Um); Jurassic/Triassic metavolcanic rocks (JTRv); Paleozoic marine (IP); and Paleozoic metavolcanic rocks (IPv).

The predominant rock type present in the foothill area is Jurassic/Triassic metavolcanic rocks (JTRv), a dark green fine-grained metavolcanic. Fractures in these rocks range from massive to very closely fractured (foliated). The attitude of foliation within the foothill area generally strikes N 20° to N 40° West, dipping steeply to the northeast.

The Jurassic/Triassic rocks have been differentiated as Copper Hill Volcanics (Jch) and Salt Springs Slate (Jss) of Late Jurassic age. The Copper Hill Volcanics are reported to consist of mafic to andesitic pyroclastic rocks, lava, and pillow lava with subordinate felsic porphyritic and pyroclastic rocks. The Salt Springs Slate occurs as thin interbeds in this volcanic pile and is reported to consist of dark gray slate with subordinate tuff, graywacke, and rare conglomerate.

Regional trends within the Copper Hill and Salt Springs units are reported to be north-northwesterly with a steep easterly dip (Tierra Engineering, 1983). The units are also reported to exhibit greenschist facies regional metamorphism (Bateman and Wahrhaftig, 1966).

The regional structure and tectonic framework is dominated by the Foothills Fault System which traverses the western side of the Sierra Nevada tectonic block. This fault system developed in the early Mesozoic during several episodes of continental accretion involving island arc belts, including the Copper Hill Volcanics. The fault system includes two major fault zones, the Bear Mountains and Melones, both of which trend north-northwest and dip steeply easterly. Approximately 25 other unnamed faults of lesser length and continuity have been mapped within the fault system. These lesser faults are subparallel to the major fault zones. There are no mapped cross faults.



2.3.4 Mountain Area Geologic Units

The mountain area of Yuba County is located on the western flank of the Sierra Nevada mountains in California. Geologic units shown on the Chico Sheet in the mountain area include Pliocene Volcanic rocks (Pv^b); Eocene nonmarine rocks (Ec); and Eocene volcanic basaltic rocks (Ev^b); Tertiary nonmarine (Tc); Mesozoic granitic rocks (Mzg); Mesozoic mafic intrusive rocks (Mzb); Mesozoic ultramafic rocks (Um); Jurassic/Triassic metavolcanic rocks (JTRv); Paleozoic marine (IP); and Paleozoic metavolcanic rocks (IPv).

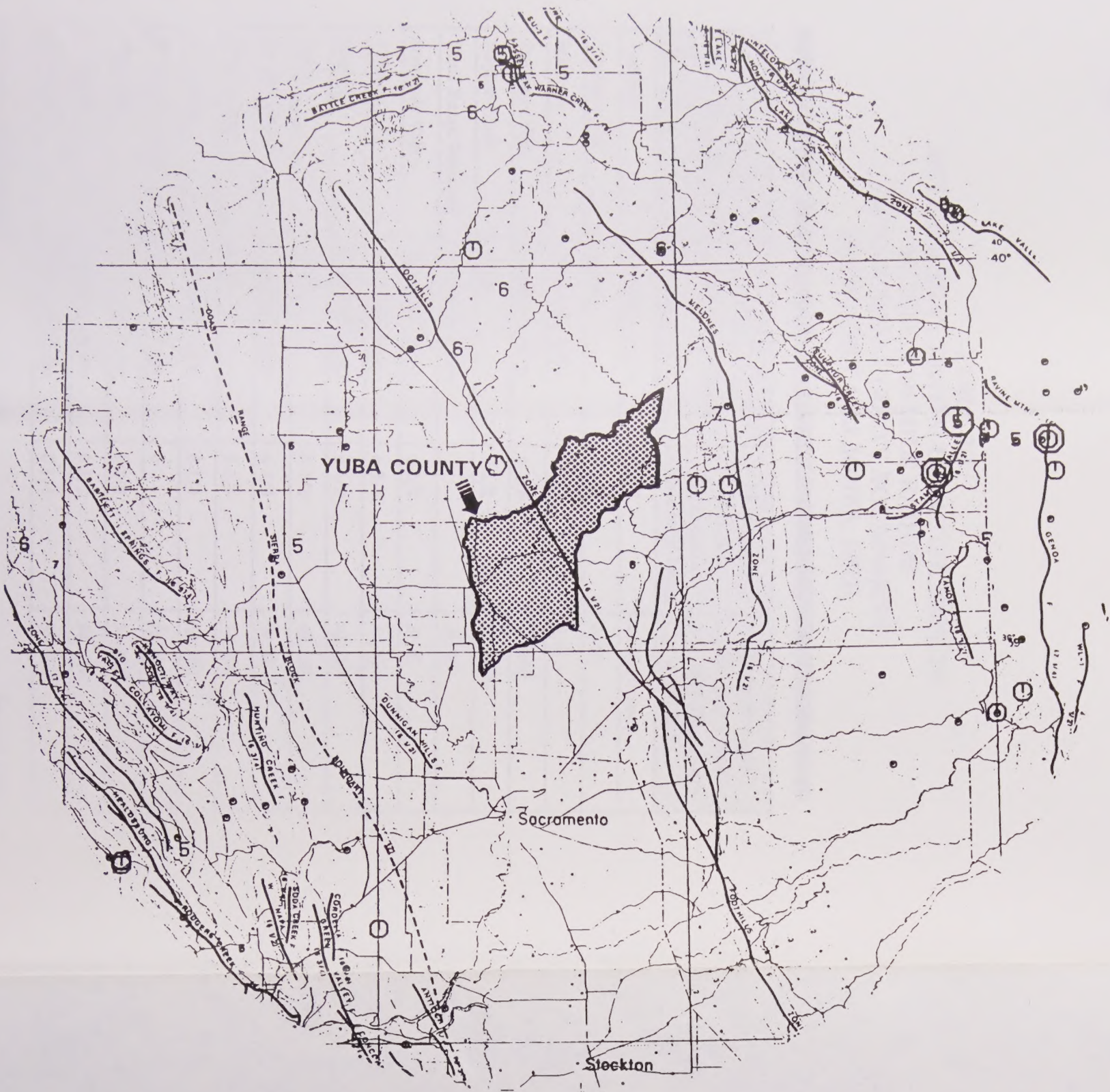
2.4 EARTHQUAKES AND RELATED EFFECTS

A review of the Earthquake Epicenter Map (CDMG, 1978) within 60 miles of the boundaries of Yuba County reveals the well-known fact that California is subject to earthquake hazards. Most of the damage and loss of life will occur in zones of known high seismic activity. Structures that do not comply with the provisions of the Field and Riley Acts, passed in 1933, will be especially vulnerable. Structures built in conformance with the Uniform Building Codes published since the early 1970's utilize seismic shaking design criteria and should offer the highest protection from seismic activity (Alfors, 1973).

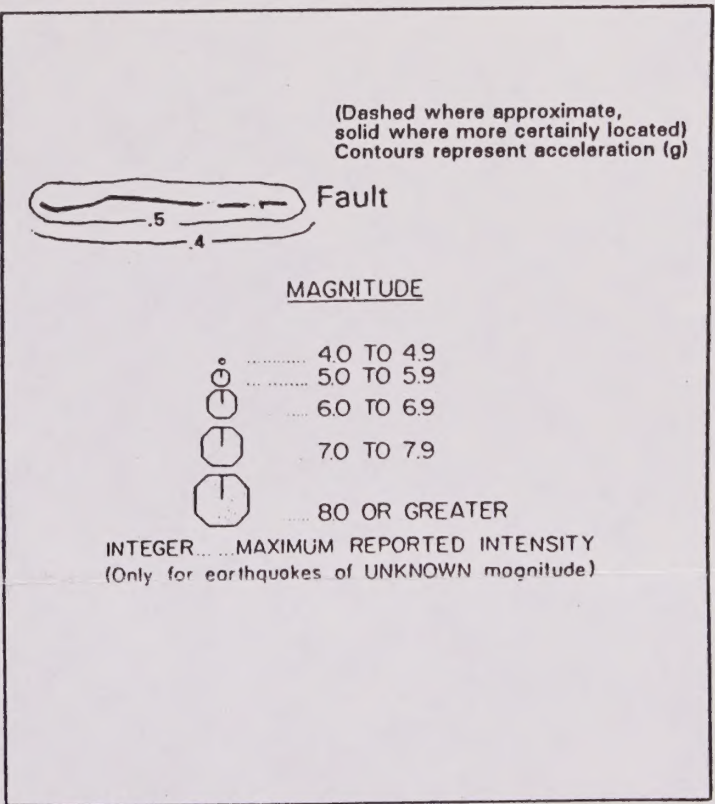
The western and eastern portions of California have the highest occurrence of seismic activity in the State. Yuba County lies in east-central California, an area experiencing relatively low seismic activity. The Foothills Fault System was studied extensively in Yuba County following the 1975 Oroville Earthquake.

2.4.1 Seismic Considerations

According to the Fault Map of California (Jennings, 1975), and the Geologic Map of the Sacramento Quadrangle, California, (Wagner, 1981), no Alquist-Priolo Special Study Zones active faults are located within Yuba County. The nearest active fault to the county is the Cleveland Hill fault which was the source of the 1975 Oroville Richter Magnitude 5.7 earthquake. There are several active and other potentially active faults within a 60 mile (100 Kilometer) radius of the site (Figure 2-3). The major faults mapped in the region (Mualchin, 1992) are listed in Table 2-1 along with their reported Maximum Credible Earthquake in moment magnitude.



YUBA COUNTY



Source:
Base Map Reference: Peak Acceleration from
Maximum Credible Earthquakes in California,
1992, C.D.M.G. OFR 92-1 and Earthquake
Epicenter Map of California, 1978, C.D.M.G. Map
Sheet 39.

QUAD

FAULT & EPICENTER LOCATION MAP

FIGURE
2-3



TABLE 2-1
ACTIVE AND POTENTIALLY ACTIVE FAULTS
WITHIN A 60-MILE RADIUS
OF THE YUBA COUNTY BOUNDARIES
(MUALCHIN AND JONES, 1992)

Fault	Fault Classification	Maximum Credible Earthquake (Richter Mag.)	Distance and Direction from County Boundary (miles)
Foothills	Potentially Active	6 1/2	within County
Cleveland Hill	Active	6 1/2	4, N
Melones	Potentially Active	6 1/2	8, E
Dunnigan Hills	Potentially Active	6 1/2	17, SW
Sulphur Creek	Active	6 1/2	22, NE
Coast Range Boundary	Potentially Active	7	35, W
Stampede Valley	Potentially Active	6 1/2	37, E
Huning Creek	Potentially Active	6 3/4	41, W
Cordelia	Potentially Active	6 1/2	49, SW
Tahoe	Active	6 1/2	49, SE
Bartlett Springs	Potentially Active	6 3/4	51, W
Green Valley	Active	6 3/4	51, SW
Soda Creek	Potentially Active	6 1/4	51, SW
Ravine Mountain	Potentially Active	6	53, E
West Napa	Potentially Active	6 1/2	54, SW
Collayomi	Potentially Active	6 1/2	54, SW
Konocti Bay	Potentially Active	6 1/4	54, SW



Fault	Fault Classification	Maximum Credible Earthquake (Richter Mag.)	Distance and Direction from County Boundary (miles)
Antioch	Active	6 3/4	56, SW
Warner Creek	Potentially Active	6	56, N
Honey Lake	Potentially Active	7 1/4	57, NE
Honey Lake Valley	Potentially Active	7	57, NE
Antelope Mountain	Potentially Active	6 1/2	57, NE
SU-5	Potentially Active	6 1/2	57, NE
Hat Creek	Potentially Active	6 3/4	59, N
Lassen Peak	Potentially Active	6 1/4	59, N

Source: California Division of Mines and Geology, 1992.

2.4.2 Fault Movement

The Oroville earthquake was considered unusual by scientists because previous studies of the fault system had not detected seismic activity since the Holocene Epoch. Following the Oroville earthquake, several State and federal agencies studied the Foothills Fault System to determine the nature and extent of faulting. Within Yuba County the Swain Ravine Lineament of the Foothills Fault System is considered a continuation of the Cleveland Hill Fault. The Prairie Creek lineament joins with the Swain Ravine lineament in southwestern Yuba County and surface cracking was observed on this lineament in Palermo following the 1975 Oroville earthquake. The Swain Ravine and Prairie Creek lineaments of the Foothills Fault System are considered capable of seismic activity, but the activity is estimated to have a very long recurrence interval and a very low slip rate. Excepting the Cleveland Hill Fault, located in Butte County, the Foothills Fault System has not yet been classified as active and special seismic zoning was determined not to be necessary by the California Division of Mines and Geology (Hart, 1990).



Studies of the Oroville and New Bullards Bar reservoirs suggest the 1975 Oroville earthquake may have been triggered by fluctuating water levels in Lake Oroville (CDMG, 1987). Level surveys were conducted by the National Geodetic Survey in 1934 and 1949 and re-levelings by the California Division of Mines and Geology in 1979 over segments of the Foothills Fault System. The data indicate that the well-defined Bear Mountains Fault Zone near Auburn and the Melones Fault Zone have experienced vertical deformation since 1934. Much of the observed vertical deformation was preferentially confined within structurally weak ultramafic (serpentinite) shear zones. Exploratory trenches across the Spencerville lineament of the Foothills Fault System, located at the southern confluence of the Swain Ravine and Prairie Creek lineaments, revealed that faulting was continuous into the overlying soils (Alt, 1977). Microseismic studies conducted between Auburn and Oroville detected a continuing pattern of low-level seismicity (Cramer, 1977). Between 1975 and 1977, seven M 1 to M 2 micro earthquakes were recorded. Two events were located southeast of Honcut and one event east of Marysville (Marks, 1977). Damaging earthquakes, in the Richter magnitude range 5 to 6 have occurred within the northern Foothills Fault System in 1975, 10 km south of Oroville, and in 1909 and 1888 about 15 km northeast of Nevada City. From 1864 to 1869, four earthquakes, in the Richter magnitude range 4 to 5 occurred in Nevada and Sierra counties along segments of the Foothills Fault system. Two magnitude 3 events occurred along the Melones Fault Zone: in 1950, about 20 km northeast of Auburn and in 1960, about 15 km southwest of Nevada City. These data suggest that portions of the Foothills Fault System are seismically active (Clark, 1978).

The Foothills Fault System in Yuba County is well-defined, but is not appropriate for Special Study zoning due to the lack of Holocene surface displacement, a very low slip rate (<0.005 mm/year) and long recurrence interval (Woodward Clyde, 1978).

2.4.3 Liquefaction

Liquefaction is the transformation of saturated granular material from a solid to a liquid caused by a rapid increase in liquid pore pressure brought about by ground shaking (Bates, 1980). As with the damage areas from the Loma Prieta Earthquake, those areas within Yuba County underlain by saturated unconsolidated sands (and, potentially gravels) are suspect for liquefaction



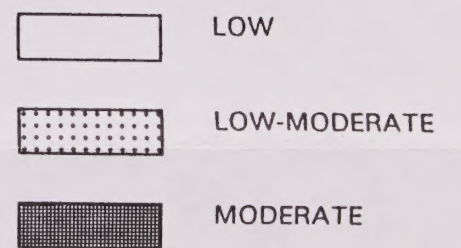
from far-field major or great earthquakes or from near-field moderate events (Foothills Fault System). Both laboratory investigations and observations of field performance have shown that the liquefaction potential of a soil deposit to earthquake motions depends on the characteristics of the soil, the initial stresses acting on the soil and the characteristics of the earthquake involved. The significant factors include (1) Soil Type - Uniformly graded soils, fine sands tend to liquefy more easily than coarser materials; (2) Relative Density or Void Ratio - In any given earthquake, loose soils (relative density < 70%) may liquefy but the same materials in a denser condition may not; (3) Initial Confining Pressure - The liquefaction potential of a soil is reduced by an increase in confining pressure; (4) Intensity of Ground Shaking - Studies of the soil behavior at Niigata in Japan indicate that extensive liquefaction occurred with ground accelerations exceeding 0.12 g; and (5) Duration of Ground Shaking - Liquefaction and sliding did not occur until about 90 seconds after the ground shaking began with the Alaska earthquake of 1964. The liquefaction potential decreases with a shorter duration of ground shaking (Seed and Idriss, 1971). The valley area of Yuba County is underlain by saturated post-Eocene unconsolidated sands and fine-grained material with a potential for liquefaction. The foothill and mountain areas of the County are generally underlain by a thin soil mantle developed upon a bedrock of metamorphosed bedrock. The potential for liquefaction in these areas is limited to portions of the western foothills area where unconsolidated clean, saturated silts and sands are typically encountered along drainage and stream channels. Geotechnical studies conducted for buildings should address the potential for liquefaction in the upper 50 feet in the areas of Yuba County prone to liquefaction which are described above.

2.4.4 Landslides

The valley area of Yuba County is underlain by saturated post-Eocene unconsolidated sands and fine-grained material. Slopes in the valley area are slight and the resulting landslide hazard is low.

The foothill and mountain areas of the county are generally underlain by a thin soil mantle developed upon metamorphosed bedrock. The potential for landslides in these areas is limited to portions of the western foothills area where unconsolidated Cenozoic or Mesozoic bedrock units are encountered and on hillsides exceeding 60 percent slopes (Figure 2-4).

YUBA COUNTY



Source: USDA, SCS, Soil Survey
Yuba County, California, 1987

QUAD

LANDSLIDE POTENTIAL

**FIGURE
2-4**



Although landslide-prone areas can be identified with about 90 percent accuracy by geologic studies, only a small portion of California has been mapped in sufficient detail for land-use planning.

Grading ordinances, adopted by Yuba County and based on Chapter 70 of the Uniform Building Code, serve as effective measures for dealing with landslide exposure.

2.4.5 Differential Compaction/Seismic Settlement

Fine-grained soil and clay are subject to seismic settlement and differential compaction. Areas underlain by low-density silts and clays associated with fluvial depositional environments are suspect to seismically-induced settlement. These environments include old lakes, sloughs, swamps and stream beds. The amount of compaction may range from a few inches to several feet. The potential for differential compaction is highest and occurs over the largest areas during great earthquakes.

The valley area of Yuba County is underlain by saturated post-Eocene unconsolidated sands and fine-grained material. A potential for differential compaction exists where low-density and unconsolidated material is encountered, such as overbank river deposits (present-day and historic) common to the valley area.

The foothill and mountain areas of the county are generally underlain by a thin soil mantle developed upon metamorphosed bedrock. The potential for differential compaction in these areas is limited to portions of the western foothills area where unconsolidated Cenozoic or Mesozoic bedrock units are encountered.

Geotechnical investigations should be conducted for buildings sites in areas underlain by low-density fluvial materials to address the potential for differential compaction.

2.4.6 Ground Rupture

Given the available geologic and seismologic data, ground rupture is not anticipated to occur in the valley area. Ground rupture is possible within the



Foothills Fault System, but the rupture is anticipated to be limited to surface cracking associated with damaging earthquakes in the Richter Magnitude range 5 to 6 1/2.

Although ground rupture can be identified with about 90% accuracy by fault studies, only a small portion of California has been mapped in sufficient detail for land-use planning. Building design parameters, adopted by Yuba County and based on Chapter 23 of the Uniform Building Code, will serve as effective measures for dealing with ground rupture hazards.

2.4.7 Ground Shaking

The loss directly attributable to the Loma Prieta earthquake on October 17, 1989 is estimated between \$6 and \$10 billion, categorizing this event as the most costly single earthquake related disaster in U.S. history. Local site effects exerted a strong influence on the severity of ground shaking throughout the affected region. The affected areas were underlain by deep, clayey alluvium which amplified the levels of shaking produced at the ground surface. More than 80 percent of the damage and loss of life occurred on considerably less than 1 percent of the land area within approximately 50 miles of the fault rupture zone (EERC, 1990). Most of the damage resulting from the Loma Prieta earthquake was due to seismically induced liquefaction and landsliding.

Strong earthquakes generated along any of the faults within the region may affect the site depending on the characteristics of the earthquake and the location of the epicenter. In general, the effects will be confined to those phenomena associated with shaking and/or ground acceleration. These effects can be minimized by appropriate design and construction procedures. The Uniform Building Code classifies Yuba County as being within the seismic region Zone 3. The minimum ground accelerations used for structure design within seismic region Zone 3 is 0.3 g. Essential services, hazardous facilities, bridges, dams, and multiple-occupancy structures located close to the Foothills Fault system may require more restrictive designs in accordance with higher anticipated ground accelerations.

The valley area of Yuba County has soil types anticipated to exhibit poor response to ground shaking. In general, the fluvial deposits of the valley area



are expected to amplify the effects of strong ground shaking from a far-field major or great earthquake. The foothill and mountain areas of Yuba County are generally underlain by thin soils developed upon competent bedrock. The thin soil developed in the foothill and mountain areas is anticipated to provide attenuation of ground shaking.

Increased Uniform Building Code Chapter 23 S-Factors ($S > 1$) may be appropriate for some designs located in the valley area; S-Factors of 1 may be appropriate for most residential and light-commercial designs located in the foothill and mountain areas.

2.4.8 Seiches

A seiche is a periodic oscillation of a body of water whose period is determined by the resonant characteristics of the containing basin. In inland lakes, these periods usually are a few minutes long. Loss due to flooding or dam failure is possible with extended duration ground shaking at a frequency constructive with the period of the lake.

Within the Foothills Fault System, the Maximum Credible (seismic) Event is thought to be a Richter Magnitude 6 1/2 with a short duration of strong ground shaking. Based on the anticipated short duration of ground shaking in Yuba County, the risk associated with seismic-induced seiche is low. However, reservoir structures should be designed with adequate freeboard and strength to mitigate possible seiche from far-field seismic events.

2.4.9 Flooding Due to Failure of Dams and Levees

Dams with artificial barriers 25 feet or more in height or which have an impounding capacity of 50 acre-feet or more are under jurisdiction of the California Department of Water Resources, Division of Dam Safety. Twelve dams in Yuba County are under the jurisdiction of the Division of Dam Safety (Figure 2-5 and Table 2-2). Six of the jurisdictional dams have inundation maps prepared which assess the flooding resulting from catastrophic failure of the dam (Figure 2-6).

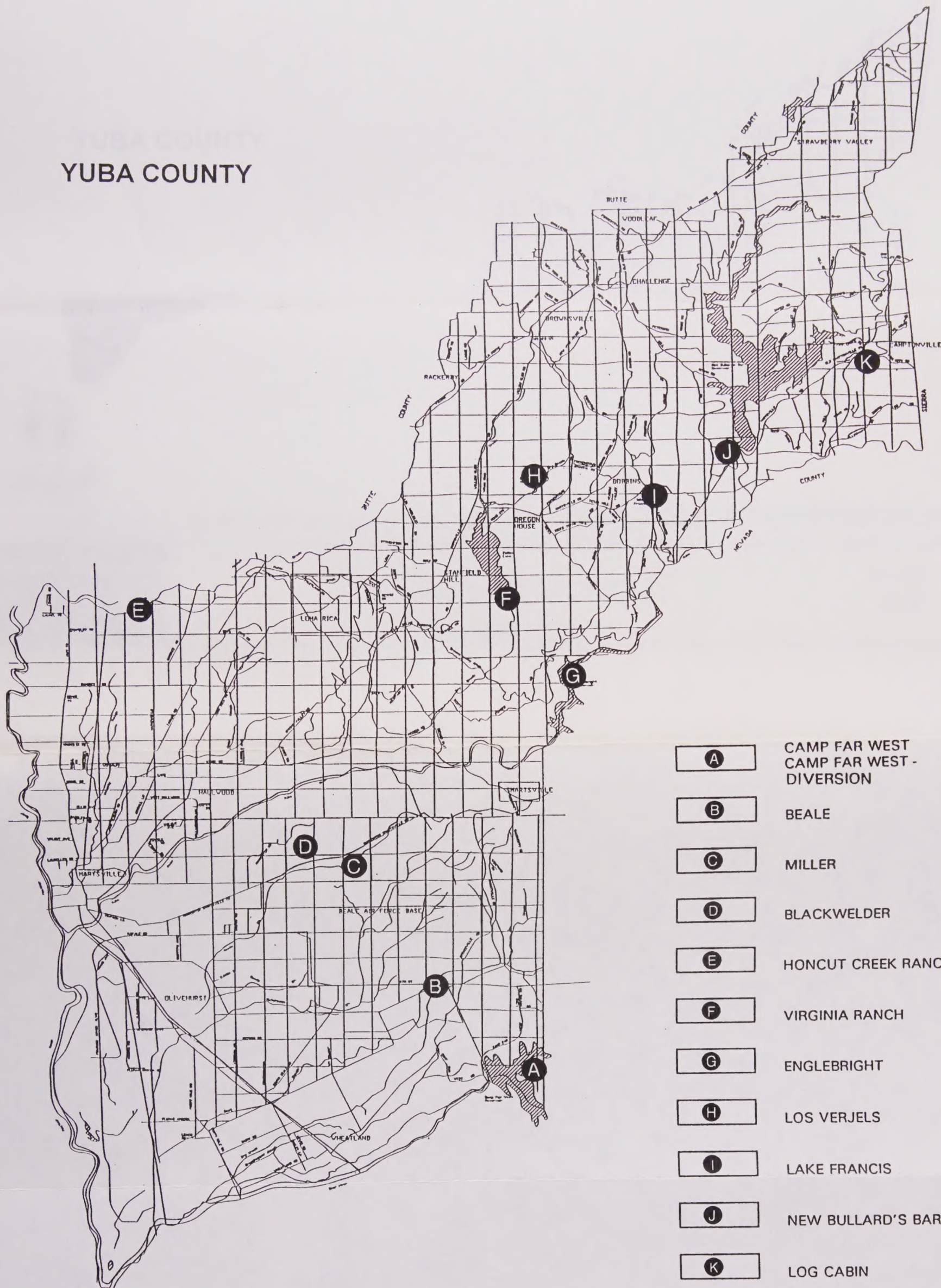


TABLE 2-2
JURISDICTIONAL DAMS IN YUBA COUNTY

Name	I.D. No.	Type	Height	Date Filled	Inundation Maps
Beale	9000-115	Gravity	13'	1952	No
Blackwelder	9000-116	Earth Fill	25'	1962	No
Camp Far West	52-000	Earth Fill	185'	1963	Yes, 4
Camp Far West Diver.	52-002	Gravity	32'	1977	Yes, 4
Englebright	9000-105	Var. Radius Arch	260'	1941	Yes, 5
Honcut Creek Ranch	337-000	Earth Fill	NA	NA	No
Lake Francis	1034-009	Hydraulic Fill	77'	1905	Yes, 1
Log Cabin	1034-003	Var. Radius Arch	49'	1968	Yes, 1
Los Verjels	334-000	Multiple Arch	56'	1915	No
Miller	9000-119	Earth Fill	30'	1962	No
New Bullards Bar	1034-000	Var. Radius Arch	635'	1970	Yes, 15
Virginia Ranch	1021-000	Earth Fill	152'	1963	Yes, 3

Source: Youngdahl and Associates, Inc., September 1992.

YUBA COUNTY



Source: Youngdahl & Associates

YUBA COUNTY



AREAS SUBJECT TO INUNDATION
DUE TO DAM FAILURE



Source: Department of Water Resources, Dam Inundation Maps, 1974-1976



The Lake Francis Dam reportedly failed in 1902 due to hasty construction practices and was rebuilt in 1905. In 1973 dynamic analysis was conducted on the Lake Francis Dam and Pacific Gas & Electric Company has evaluated the seismic performance in relation to the Foothills Fault system. In addition to the jurisdictional dams, several smaller mining and agricultural dams exist in Yuba County. Some of these small earth fill dams have failed over the years, according to the Yuba County Water Agency.

Flooding from dam failure will have the highest impact upon the low-lying valley area. According to the California Department of Water Resources, Division of Dam Safety, the dams under its jurisdiction are safe and there is a very low probability of failure.

The design factors for ground accelerations should be checked in all of the dams for compliance with a minimum ground acceleration of 0.3 g. Dams located within the area of influence of the Foothills Fault System should be evaluated for the possibility of ground accelerations in excess of 0.3 g. If a dam is determined to be under-designed, the Department of Water Resources flood inundation map for the under-designed dam should be utilized as a planning guide for future down-stream development.

2.5 SOILS

Soils of Yuba County vary in their chemical and physical properties in accordance with differences in parent material, drainage, and age or degree of development since their deposition. The soils may be divided into two broad groups: (1) those derived from recent alluvial depositions, and (2) those derived from old alluvial fans or terraces (DWR, 1952). The soils generally consist of silty, fine to coarse grained sands, sandy silts and sandy gravels.

A general mapping of the soils of Yuba County was conducted during a cooperative effort between the County of Yuba and the University of California, Davis in 1966. More recently (1987), the United States Soil Conservation Service (SCS) has undertaken a soil survey of Yuba County which refines and supercedes the earlier work. Although not yet published in its entirety, the reported results are utilized in this Paper. The soil associations reported by SCS for Yuba County are described below and shown on Figure 2-7. A listing showing the soil class capability



for each of the soils can be found on Table 2-3. An explanation of soil and management classifications used by SCS is included on Table 2-4.

Columbia-Holillipah-Shanghai: Very deep, poorly and somewhat excessively drained alluvial soils; on flood plains.

Mine Tailings: Very deep materials deposited during gold mining operations; on river channels and on flood plains.

Conejo-Kilaga: Very deep, well drained alluvial soils; on stream terraces.

San Joaquin: Moderately deep, well drained alluvial soils that have a dense clay subsoil; on low fan terraces.

Redding-Corning-Pardee: Moderately deep, well-drained alluvial soils that have a dense clay subsoil; on low fan terraces.

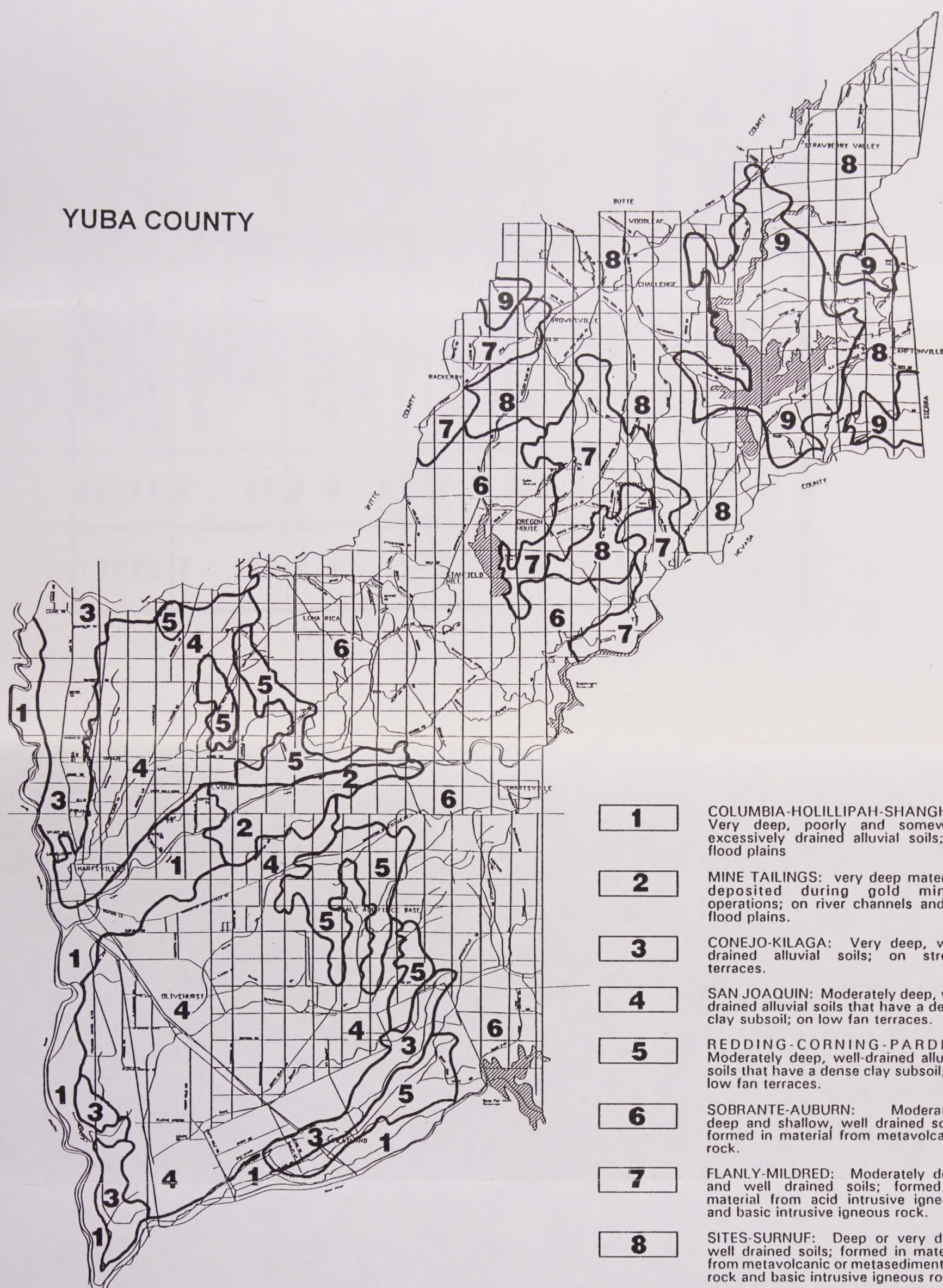
Sobranite-Auburn: Moderately deep and shallow well drained soils; formed in material from metavolcanic rock.

Flanly-Mildred: Moderately deep and well drained soils; formed in material from acid intrusive igneous and basic intrusive igneous rock.

Sites-Surnuf: Deep or very deep well drained soils; formed in material from metavolcanic or metasedimentary rock and basic intrusive igneous rock.

Hoda-Hotaw-Holland: Moderately deep to very deep well drained soils; formed in material from acid intrusive igneous rock.

YUBA COUNTY



- 1** COLUMBIA-HOLLIPAH-SHANGHAI: Very deep, poorly and somewhat excessively drained alluvial soils; on flood plains
- 2** MINE TAILINGS: very deep materials deposited during gold mining operations; on river channels and on flood plains.
- 3** CONEJO-KILAGA: Very deep, well-drained alluvial soils; on stream terraces.
- 4** SAN JOAQUIN: Moderately deep, well drained alluvial soils that have a dense clay subsoil; on low fan terraces.
- 5** REDDING-CORNING-PARDEE: Moderately deep, well-drained alluvial soils that have a dense clay subsoil; on low fan terraces.
- 6** SOBRANTE-AUBURN: Moderately deep and shallow, well drained soils; formed in material from metavolcanic rock.
- 7** FLANLY-MILDRED: Moderately deep and well drained soils; formed in material from acid intrusive igneous and basic intrusive igneous rock.
- 8** SITES-SURNUP: Deep or very deep well drained soils; formed in material from metavolcanic or metasedimentary rock and basic intrusive igneous rock.
- 9** HODA-HOTAW-HOLLAND: Moderately deep to very deep will drained soils; formed in material from acid intrusive igneous rock.



Source: USDA, SCS, Soil Survey
Yuba County, California, 1987.



AREA MAP NUMBER	SOIL ASSOCIATIONS	SOIL CLASS	CLASS CAPABILITY	
			Non- Irrigated	Irrigated
6	Sobrante-Auburn	Auburn-Sobrante-Rock complex, 8-15%	IVc	IVc
		Auburn-Sobrante-Rock complex, 15-30%	IVe	IVe
		Auburn-Sobrante-Rock complex, 30-50%	VIe	-
		Auburn-Sobrante-Rock complex, 50-75%	VIIe	-
		Auburn-Sobrante grav. loam, 3-8%	IVe	IVe
		Auburn-Sobrante grav. loam, 8-15%	IVe	IVe
		Auburn-Sobrante grav. loam, 15-30%	IVe	IVe
		Auburn-Sobrante grav. loam, 30-50%	VIc	-
		Auburn-Sobrante, 3-8%	IVe	IVe
		Auburn-Sobrante loams, 8-15%	IVe	IVe
		Auburn-Sobrante loams, 15-30%	IVe	IVe
		Auburn loam, 3-8%	IVe	IVe
		Auburn loam, 8-15%	IVe	IVe
		Auburn loam, 15-30%	IVe	IVe
		Auburn loam, 30-50%	VIe	-
		Sobrante gravelly loam, 3-8%	IIIe	IIIe
		Sobrante gravelly loam, 8-15%	IIIe	IIIe
		Sobrante-gravelly loam, 15-30%	IVe	IVe
		Sobrante-Rock outcrop complex, 30-50%	VIe	-
7	Flanly-Mildred	Flanly sandy loam, 3-8%	IIIe	IIIe
		Flanly sandy loam, 8-15%	IVe	IVe
		Flanly sandy loam, 15-30%	VIe	-
		Flanly sandy loam, 30-50%	VIIe	-
		Flanly-Rock outcrop complex, 50-75%	VIIe	-
		Mildred cobbly loam, 3-8%	IVe	IVe
		Mildred cobbly loam, 8-15%	IVe	IVe
		Mildred cobbly loam, 15-30%	VIe	-
		Mildred cobbly loam, 30-50%	VIIe	-



AREA MAP NUMBER	SOIL ASSOCIATIONS	SOIL CLASS	CLASS CAPABILITY	
			Non- Irrigated	Irrigated
8	Sites-Surnuf	Sites loam, 3-8%	IIIe	Ile
		Sites loam, 8-15%	IIIe	IIIe
		Sites gravelly loam, 15-30%	IVe	IVe
		Sites gravelly loam, 30-50%	VIe	-
		Sites gravelly loam bedrock subs., 3-8%	IIIe	Ile
		Sites gravelly loam bedrock subs., 8-15%	IIIe	IIIe
		Sites gravelly loam bedrock subs., 15-30%	IVe	IVe
		Sites gravelly loam bedrock subs., 30-50%	VIe	-
		Sites loam, cool, 3-15%	IIIe	IIIe
		Surnuf loam, 8-15%	IIIe	IIIe
		Surnuf loam, 15-30%	IVe	IVe
		Surnuf cobbly loam, 8-15%	IIIe	IIIe
		Surnuf cobbly loam, 15-30%	IVe	IV
		Surnuf cobbly loam, 30-50%	VIe	-
		Surnuf loam, 30-50%	VIe	-
9	Hoda-Hotaw- Holland	Hoda loam, 8-15%	IIIe	IIIe
		Hoda loam, 15-30%	IVe	IVe
		Hoda loam, 30-50%	VIe	-
		Hotaw sandy loam, 15-30%	VIe	-
		Hotaw sandy loam, 30-50%	VIe	-
		Holland sandy loam, 30-50%	VIe	-
		Holland-Hoda-Hotaw complex, 2-30%	VIe	-
		Holland-Hoda-Hotaw complex, 30-50%	VIe	-
		Holland-Hoda-Hotaw complex, 10-40%	VIe	-

Source: Yuba County Soil Survey Tables, Volume II, October 1987.

TABLE 2-4
SOIL CONSERVATION SERVICE
SOIL USE AND MANAGEMENT CLASSIFICATIONS

CAPABILITY GROUPING shows, in a general way, the suitability of soils for most kinds of field crops. The groups are made according to the limitations of the soils when used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, horticultural crops, or other crops requiring special management. The capability system groups soils at three levels, the **capability class, subclass, and unit**:

Capability Classes

Capability Classes, the broadest groups, are designated by Roman numerals I through VIII. Increasing numerals indicate progressively greater limitations and narrower choices for practical use, defined as follows:

CLASS I soils have few limitations that restrict their use.

CLASS II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

CLASS III soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.

CLASS IV soils have very severe limitations that reduce the choice of plants, require very careful management, or both.

CLASS V soils are not likely to erode but have other limitations, impractical to remove, that limit their use largely to pasture, range, woodland, or wildlife.

CLASS VI soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture, range, woodland, or wildlife.

CLASS VII soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or wildlife.

CLASS VIII soils and landforms have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife, or water supply, or to aesthetic purposes.

Capability Subclasses

Capability Subclasses are soil groups within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the Class numeral, for example, IIe.

- e** Main limitation is risk of erosion unless close-growing plant cover is maintained;
- w** Water in or on the soil interferes with plant growth or cultivation (in some areas the wetness can be partly corrected by artificial drainage);
- s** Soil is limited mainly because it is shallow, droughty, or stony;
- c** Chief limitation is climate that is too cold or too dry.

Capability Units

Capability Units are soil groups within the Subclasses. The soils in one capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. The Capability Unit numerals are added with a hyphen to the classes and subclasses, for example, IIe-3.

- 0. A problem or limitation caused by sand or gravel in the substratum;
- 1. An actual or potential erosion hazard;
- 2. A problem or limitation of wetness caused by poor drainage or flooding;
- 3. A problem or limitation caused by slow or very slow permeability of the subsoil or substratum;
- 4. A problem or limitation caused by coarse soil texture or excessive gravel;
- 5. A problem or limitation caused by moderately fine or fine textured soil;
- 6. A problem or limitation caused by salt or alkali;
- 7. A problem or limitation caused by cobblestones, other stones, or rock outcrops;
- 8. A problem or limitation caused by a shallow depth to soil bedrock or hardpan;
- 9. A problem or limitation caused by low fertility, acidity, or by toxicity.

LAND RESOURCE AREA designations are used in conjunction with the Capability Grouping to indicate the geographic region in which a soils unit occurs. A Land Resource Area is a broad geographic area that has a distinct combination of climate, soils, vegetation, management needs, and kinds of crops that can be grown. The 48 conterminous States in the U.S. have been divided into 156 Land Resource Areas. The number of the Resource Area is added, in parentheses, to the Class, Subclass, and Unit designation, for example, IIe-3 (17). (17) is the Land Resource Area designation for the Sacramento-San Joaquin Valleys.



2.5.1 Slope and Foundation Instability

Figure 2-8 shows the generalized occurrence of slopes in Yuba County. Slopes in excess of 15 percent normally require special precautions.

2.5.1.1 Unstable Cut and Fill Slopes

Cut slope angles should reflect the materials in which they are excavated. In general, cut and fill soil slopes should be constructed at a gradient no steeper than 2:1 (horizontal to vertical) without site-specific study conducted by a qualified professional.

2.5.1.2 Collapsible and Expansive Soil

Expansive soil contains large percentages of clay minerals which shrink and swell in response to seasonal drying and wetting. Expansion is most often caused by clay minerals, primarily montmorillonite and illite, present in the soil (Alfors, 1973). Shrink/swell potential of soils is shown on Figure 2-9.

The granular fluvial deposits within the valley area of Yuba County have a moderate to high expansive potential. Within the foothill and mountain areas, clay minerals are more common and these areas have a low to moderate expansive potential.

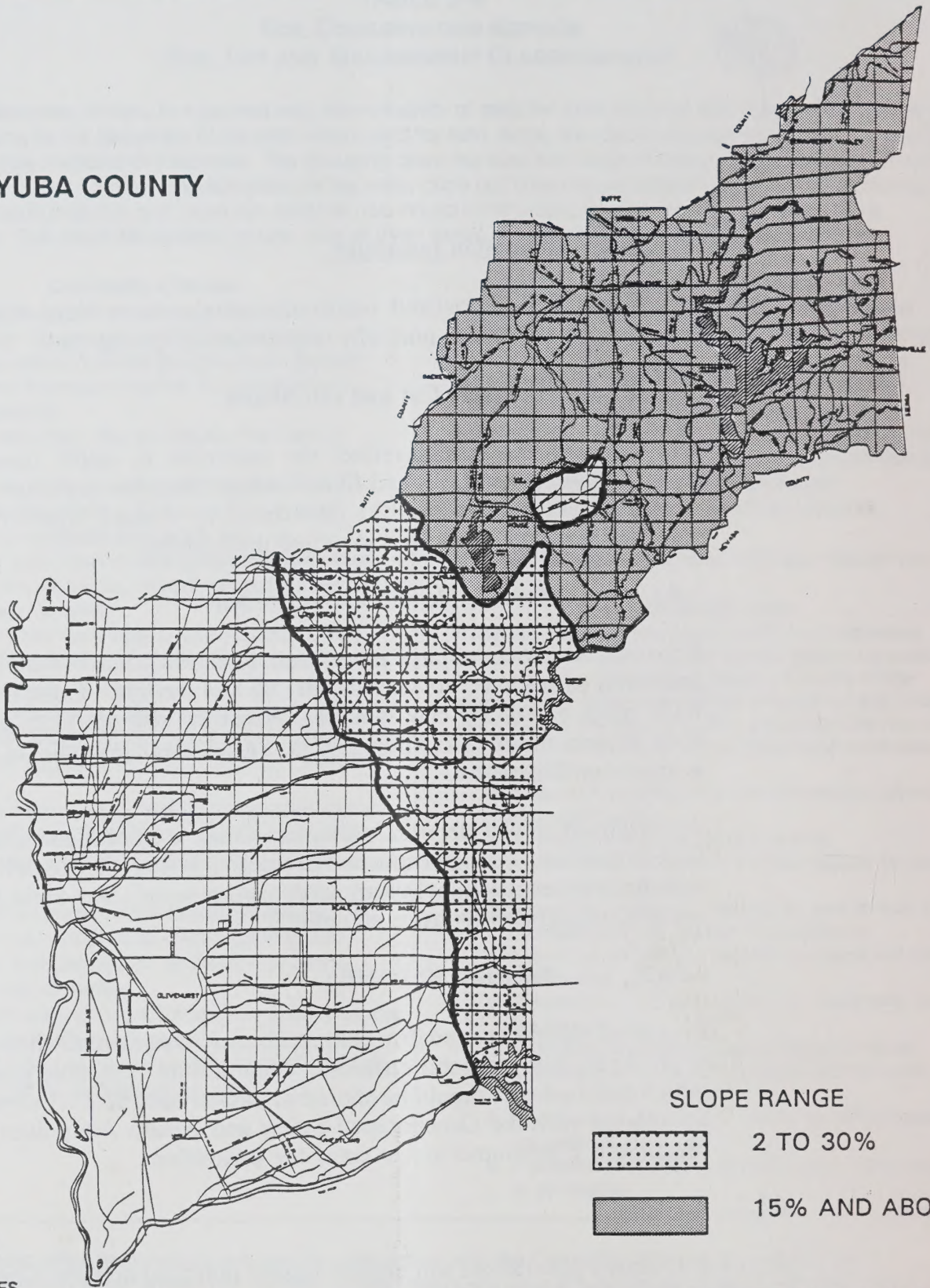
2.5.1.3 Trench-Wall Stability

In general, competent and firm native material is anticipated within the upper 5 feet below ground surface in Yuba County. Trenches greater than 5 feet in depth should be shored or sloped back at a 1:1 slope in accordance with the Occupational Safety and Health Administration regulations if personnel are to enter the excavation.

2.5.2 Erosion

Figure 2-10 shows generalized soil erosion hazard potential in Yuba County, based on the most recent SCS Soil Survey.

YUBA COUNTY

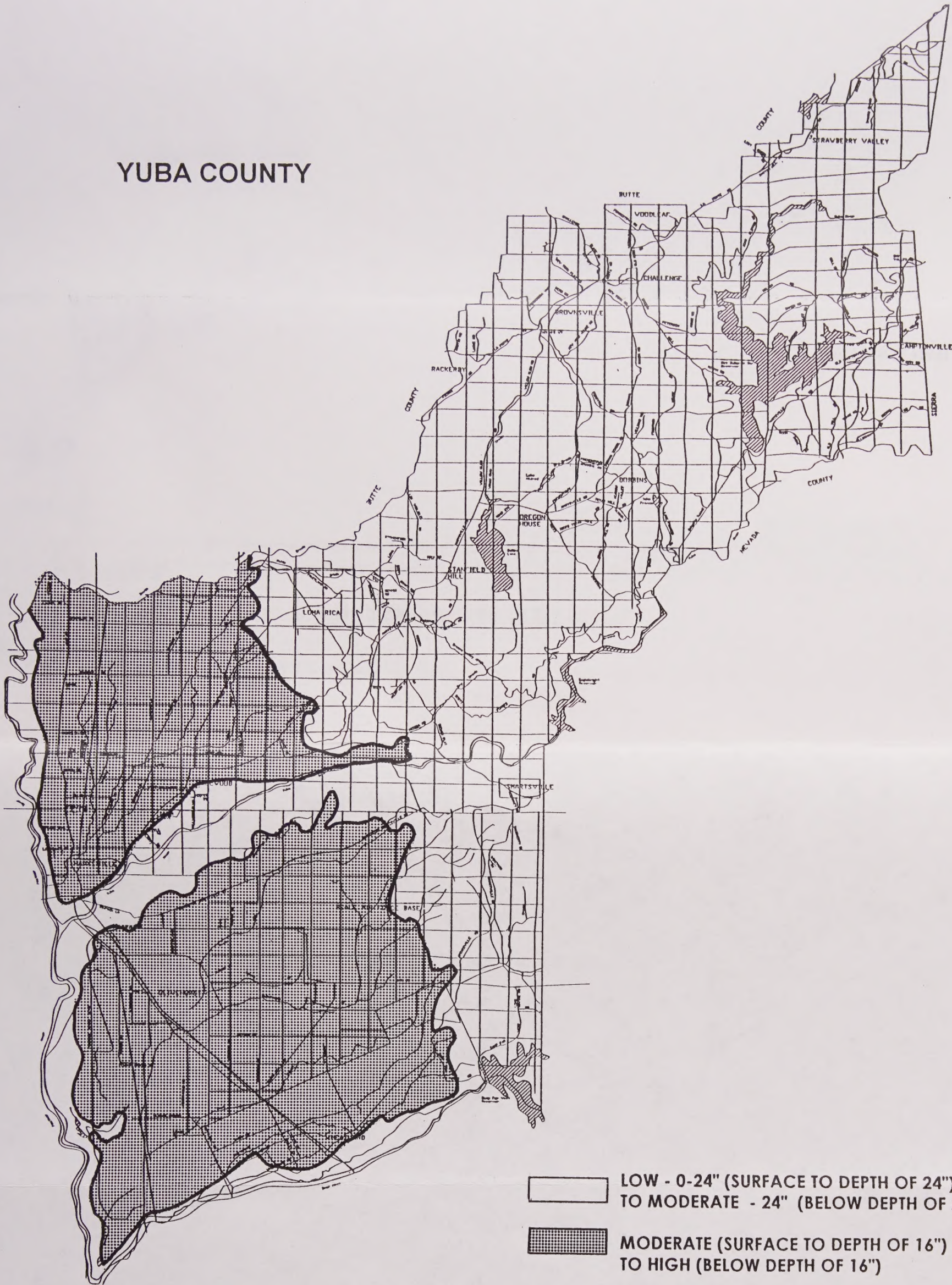


QUAD

SLOPES

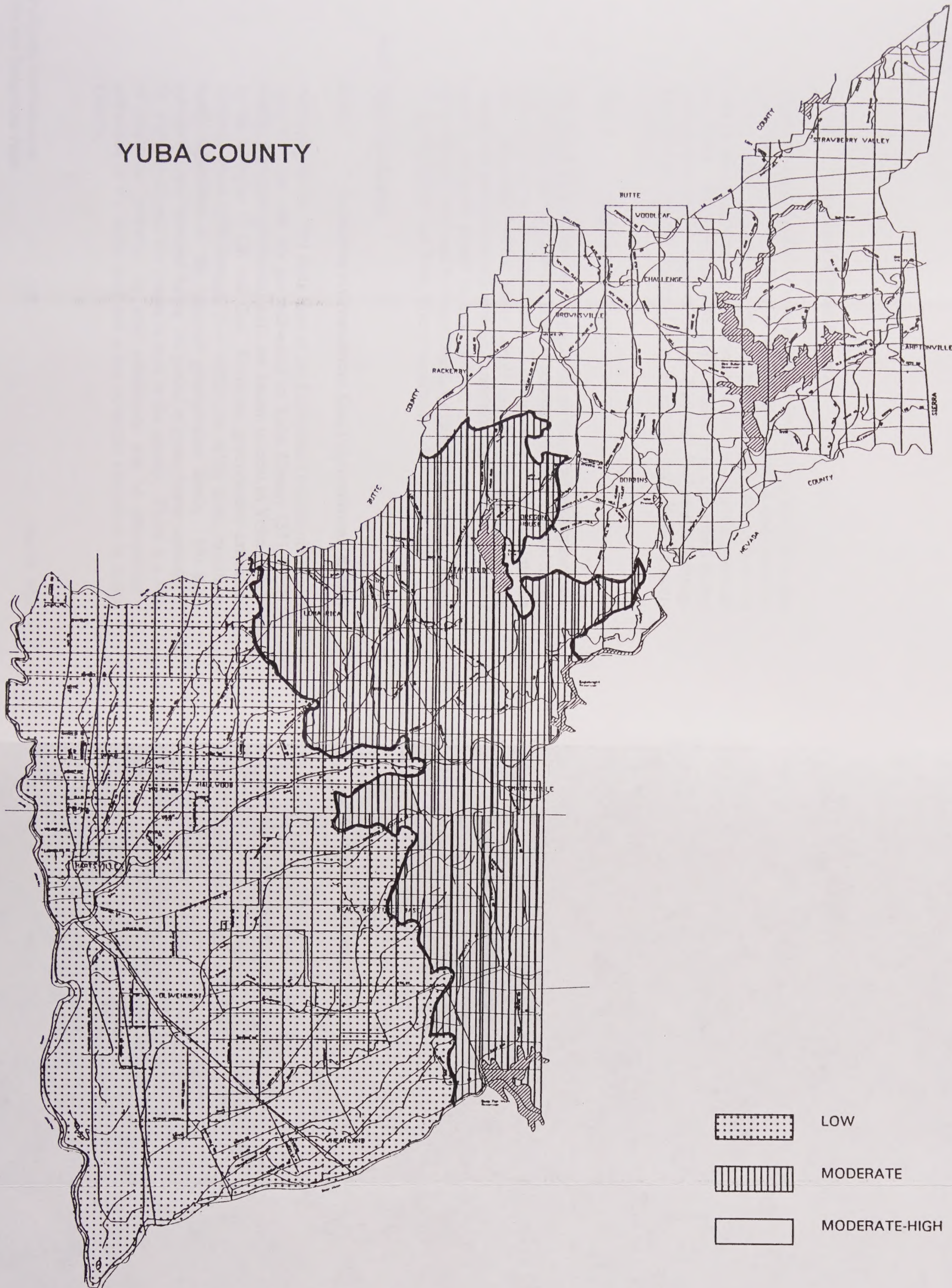
**FIGURE
2-8**

YUBA COUNTY



Source: USDA, SCS, Soil Survey,
Yuba County, California, 1987

YUBA COUNTY



- LOW
- MODERATE
- MODERATE-HIGH



Source: USDA, SCS, Soil Survey, Yuba County, California, 1987



2.5.2.1 Erosion of Graded Areas

Sandy silt is anticipated to be encountered within portions of the valley area and the upper 2 to 3 feet in portions of the foothill and mountain areas. When excavated and exposed to the weather, the surface soil may be subject to erosion, and these areas have a moderate potential for erosion. Erosion control measures should be implemented during construction which conform to the National Pollutant Discharge Elimination System Storm Drain Standards and Yuba County standards.

2.5.2.2 Alteration of Runoff

Development activities including grading, paving and building increase impervious surfaces and can result in less infiltration of rainwater into the soil; however, leveling of surfaces can increase infiltration into the soil. Increased surface water runoff could aggravate pre-existing conditions and lead to soil erosion, landsliding or mudflows. Erosion control measures should be implemented during construction which conform to the National Pollutant Discharge Elimination System Storm Drain Standards and Yuba County standards.

2.5.3 Land Subsidence

2.5.3.1 Extraction of Groundwater, Gas, Oil, Geothermal Energy

According to the 1991 Data Base of the California Division of Oil and Gas, only one idle dry gas well exists in Yuba County (S11, T15N, R4E). No oil or geothermal wells are known to exist in Yuba County by the Division of Oil and Gas. Excessive groundwater extraction occurred from 1950 through 1984 within the valley area, causing a steep depression in the regional groundwater levels. No land subsidence was recorded during this period of groundwater extraction. No deposits of peat are known to exist in the county. There is a low to moderate potential for land subsidence due to groundwater extraction in the valley area and a low potential elsewhere in Yuba County.



2.5.4 Volcanic Hazards

Volcanic damage is most likely to occur in California in the vicinity of Mt. Shasta, Lassen Peak, Medicine Lake Highland, Long Valley Caldera at Mono Lake and the Cima volcanic field in San Bernardino County (active volcanic zones) and less likely at other Quaternary volcanic hazard zones in California. Yuba County has an extremely low probability of volcanic hazard due to the distances from potential volcanic activity.

2.6 MINERAL RESOURCES

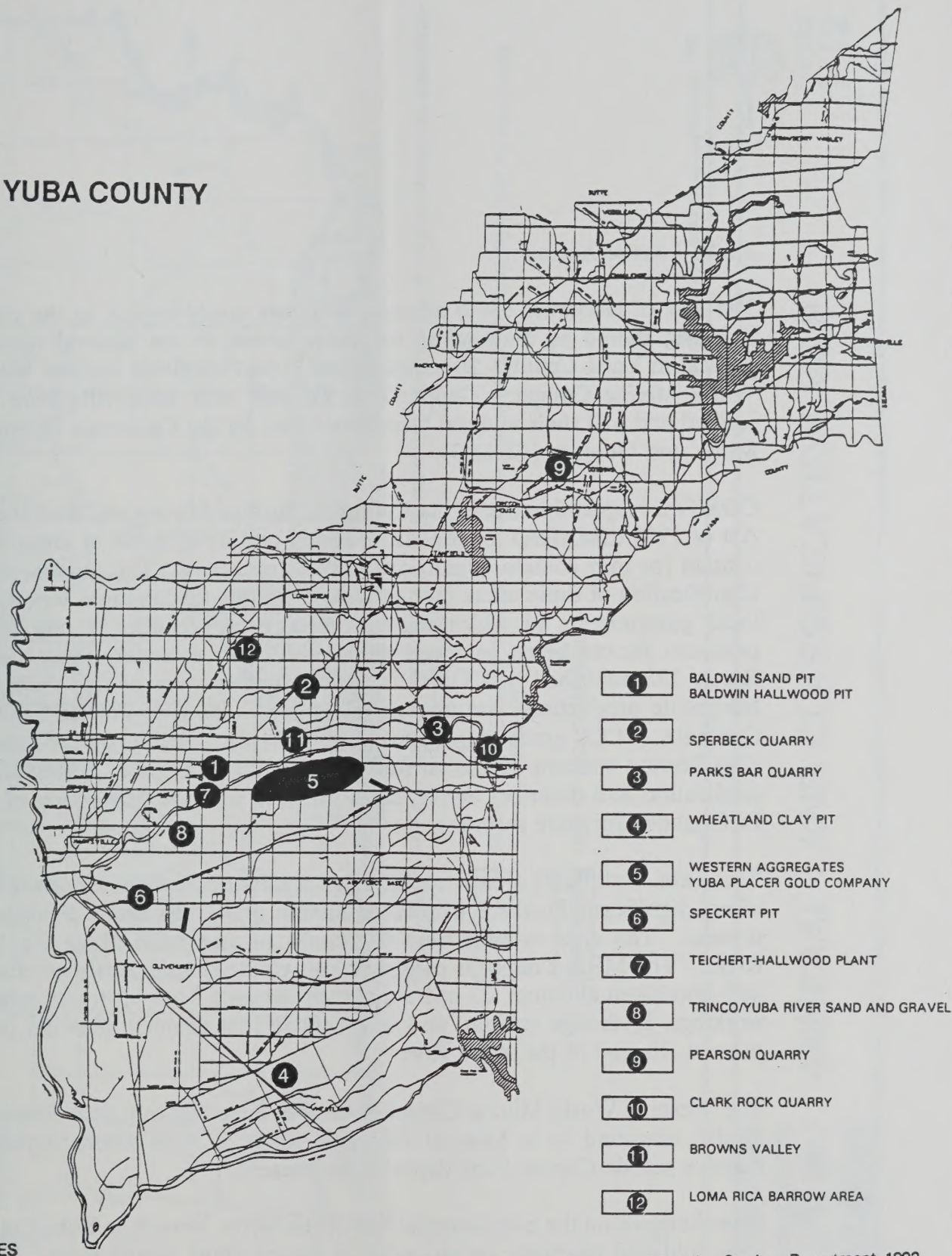
Raw or manufactured mineral products are used every day in developed nations. Unlike most natural resources, minerals are not renewable. A mineral resource is a concentration of elements in a particular location in such a form that a usable mineral commodity can be extracted from the deposit.

The most common gold mining technique utilized in Yuba County has been dredging at the Yuba Goldfield in the Hammonton District. The Yuba Goldfield is the largest placer mining operation in California. In addition to placer mining, small-scale open pit and seam mining operations exploited auriferous veins in the Mother Lode.

The mineral resources under greatest urbanization pressure are the construction materials, especially sand and gravel and crushed stone. Increasing urbanization in the San Francisco Bay and Sacramento areas has resulted in the depletion or obliteration of local aggregate sources. These areas are looking to more remote areas to meet their resource requirements.

Mineral resources present in Yuba County include precious metals (gold, platinum, molybdenite), copper, zinc, Fullers earth, sand and gravel and crushed stone (Figure 2-11). Most of Yuba County lies within the Sierra Nevada gold belt districts with sparse seam-type auriferous deposits. Each of these unique resources should be carefully managed to meet the current and future requirements of the county.

YUBA COUNTY



SOURCE: Yuba County Planning and Building Services Department, 1992.

QUAD

SURFACE MINING ACTIVITIES

**FIGURE
2-11**



2.6.1 Loss of Access

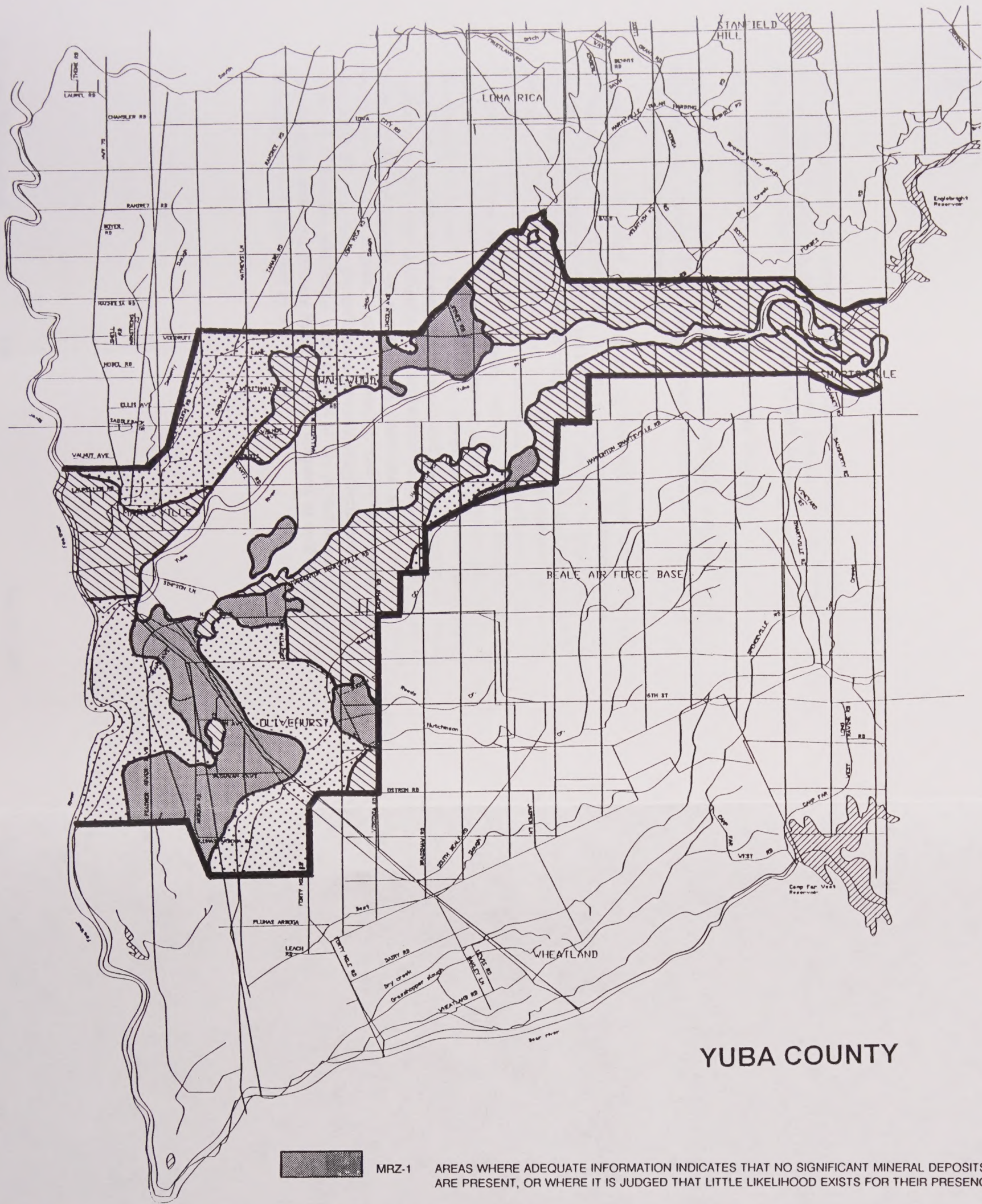
The loss of resources could amount to a very costly impact to the county. Planning should be undertaken to ensure access to the mineral resources present in Yuba County. Specifically, the Yuba Goldfields and the Western World Mining Company Copper-Zinc Deposit near Smartville have been studied and had their mineral resources zoned by the California Division of Mines and Geology (CDMG).

CDMG is responsible under the California Surface Mining and Reclamation Act of 1975 (SMARA) for the classification and designation of areas which contain (or may contain) significant mineral resources. The purpose of the identification of these areas is to provide a context for land use decisions by local governments in which mineral resource availability is one of the pertinent factors being balanced along with other considerations. *Special Report 132* published by CDMG in 1988 classifies areas of the Yuba City-Marysville production-consumption region with regard to Portland Cement Concrete (PCC) grade aggregate (Figure 2-12). Although the primary classification concern of *Special Report 132* is for PCC-grade aggregate, the publication also describes active mines involved with the production of non-PCC-grade aggregate resources.

The Yuba Goldfields area is classified as a Mineral Resource Zone 2 Area where significant Portland Cement Concrete grade aggregate deposits are present. The area extends from Marysville to Smartville along the Yuba River. The MRZ-2 deposits consist of four types: 1) natural stream channel and floodplain alluvium, 2) hydraulic wash deposits from upstream monitor workings, 3) dredge tailings, and 4) recent stream channel alluvium in the present channel of the Yuba River.

The Western World Mining Company Copper-Zinc Deposit Near Smartville is also classified as a Mineral Resource Zone 2 Area where significant massive sulfide Copper-Zinc deposits are present.

Elsewhere within the metamorphic belt of the Sierra Nevada in Yuba County, lode gold and precious metals occur in fissure-filling quartz veins. These auriferous quartz veins are often associated with fault zones and ultramafic



YUBA COUNTY



Source: California Division of Mines and Geology 1988

QUAD

MINERAL LAND CLASSIFICATION MAP

FIGURE
2-12



rocks. Ultramafic rocks within fault zones are host to layered, podiform and disseminated chromite deposits. Auriferous deposits are associated with serpentinite wallrocks in the fault zones (USGS, 1986).

2.6.2 Deposits Covered by Changed Land Use Conditions

Residential development threatens the Yuba Goldfields and other aggregate deposits in the county. These are vital resources to Yuba County. Planning is necessary to protect these areas.

In response to the need to protect mining land and operations, the Yuba County Board of Supervisors has adopted a consumer disclosure ordinance (Chapter 11.55 of the Yuba County Ordinance Code) that declares it to be in the public interest to preserve and protect mining land and operations for mining use. The ordinance finds that "...residential development adjacent to such land and operations often leads to restrictions on such operations to the detriment of these uses and economic viability of the County's... mining industries as a whole." The ordinance has as its purposes the promotion of the general health, safety and welfare; the protection of those lands zoned, designated or used for mining; the support and encouragement of mining operations; and prior notification of prospective purchasers adjacent to or near mining operations of the inherent problems associated with such purchases, including sounds, dust, odor, smoke, and vibrations. In order to accomplish its purposes, the ordinance contains requirements for disclosures to be given warning residential users of land of the potential inconveniences mining operations may present by those selling property as well as at the point building permits are issued by the County.



SECTION THREE CLIMATE AND AIR QUALITY



SECTION THREE CLIMATE AND AIR QUALITY

3.1 CLIMATE

3.1.1 General Climatic Conditions of Northern and Central California

The climates of California are a result of topography and the position of the semi-permanent subtropical cell, a center of high atmospheric pressure in the eastern Pacific Ocean off the California coast. During summer, when the cell moves over northern California and Nevada, it effectively blocks the movement of Pacific storm systems into California, hence the annual summer drought. During winter, the cell retreats to the southwest, allowing storms and frontal systems to move into northern and central California. The Coast Ranges and the higher Sierra Nevada Mountains act as barriers to these moisture-laden air masses during the wet seasons. As these moist, eastward-moving air masses approach the mountain barriers, they are forced to lift upward, thus being cooled. Since cooler air holds less water, much of the moisture is released as precipitation on the western slopes of the mountains. A "rain shadow" characterizes the leeward side of the mountains, accounting for the aridity of the Great Basin and the semi-aridity of the Central Valley. Because the Sierra Nevada Mountains are higher than the Coast Ranges, more precipitation falls on the Sierra Nevada. Precipitation occurs mainly as rain in the lower elevations and as snow in the higher altitudes. Precipitation generally increases with elevation up to about 6,500 feet above sea level. As a result of these weather patterns, California winters are cool and wet, while summers are typically hot and dry. Temperatures are customarily lower as elevation increases, although topography can produce locally anomalous conditions (Burcham 1981:62-68; Major 1988:21-60).

3.1.2 Yuba County Climate - Central Valley

The Central Valley is somewhat isolated from Pacific Ocean weather systems by the mountain ranges that surround it, including the Sierra Nevada, Coast Ranges, Tehachapi Mountains, and Cascade Range. The Carquinez Straits



in the Sacramento-San Joaquin Delta is the only direct opening into the Valley for these weather systems.

The climate of the valley portions of Yuba County typically includes cool, relatively mild winters and hot, dry summers. About 85 percent of the annual rainfall occurs between October and March; about 95 percent falls between October through April. At Marysville, average annual rainfall is 20.59 inches. Mean annual temperature in Marysville is 62° F. January is generally the coldest month. The recent three year mean low January temperature reported by the National Weather Service is approximately 35° F. Average January high temperature is 54° F. Intermittent nighttime freezing temperatures occur in December and January. July is the hottest month, with an average temperature of 79° F., and average low of 61° F. and an average high of 96° F. High temperatures commonly exceed 100° F. (R. C. Fuller Associates 1992:E-1; U.S. Army Corps of Engineers 1990:11)

During winter, wind patterns in the Sacramento Valley are either northerly or southerly. Atmospheric inversions often occur in winter, during which temperature increases with elevation. Heavy fog (known in Central California as "tule fog") forms during this season, particularly in December and January. The air beneath the fog remains cool, while above the fog, the air is warmed by the sun, thus contributing to inversion layering. This reversal of "normal" conditions inhibits the dispersion of pollutants, which thus tend to accumulate close to the ground in the area of inversion, resulting in higher smog levels. Calm conditions are common in night and early morning during winter, often in association with inversion conditions, and this factor also contributes to stagnation. In the Sacramento Valley, the inversion layer usually extends from about 500 feet to 1,200 feet elevation (R. C. Fuller Associates 1992:E-1; WPM Planning Team, Inc., 1992:9-4).

3.1.3 Yuba County Climate - Foothills and Mountains

Precipitation increases with elevation, and temperature decreases with elevation, except when inversion conditions prevail. Generally, temperatures decrease about 1° F. for each 300-foot rise in elevation. Precipitation generally increases two to four inches for each 300-foot rise. Local topography can bring about exceptions to these generalities.

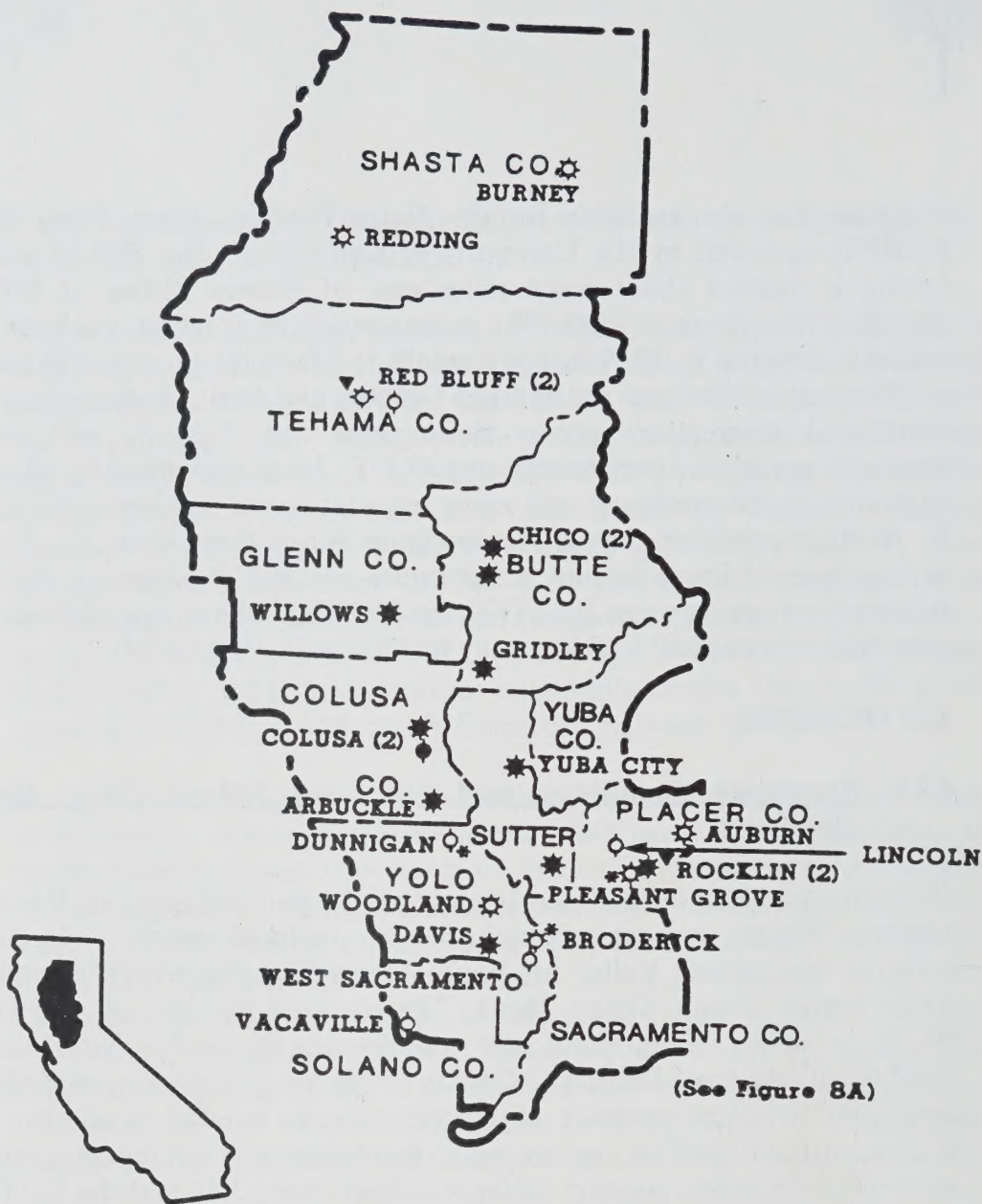


Weather data are available for the Sierra Foothill Range Field Station (SFRFS) operated by the University of California. The SFRFS weather station is located about seven miles east of Browns Valley at 650 feet elevation. For the years 1962-1991, mean annual precipitation has been 27.79 inches (compared to 20.59 inches annually in Marysville). About 94 percent of this precipitation occurred between October and April. Average maximum year-round temperature during those years was 70.3° F., and average minimum year-round temperature was 49.1° F. Mean temperature, calculated by averaging the maximum and minimum year-round temperatures, is 59.7° F. Average maximum January temperature during those years was 51.6° F., and average minimum January temperature was 36.2° F. Average maximum July temperature between 1962-1991 was 90.7° F., and average minimum July temperature was 62.8° F. (University of California 1991:86-89).

3.2 AIR QUALITY

3.2.1 Regulatory Compliance and State and Federal Clean Air Act Standards

California has been divided into 14 air basins by the California Air Resources Board (ARB) for purposes of monitoring air quality statewide. Yuba County is in the Sacramento Valley Air Basin (Figure 3-1) along with Sacramento, Yolo, Sutter, Shasta, Glenn, Butte, Tehama, and portions of Solano and Placer counties. Yuba and Sutter counties are in the Feather River Air Quality Management District (AQMD), which has primary responsibility for attainment and maintenance of District-wide air quality standards. The Feather River AQMD is also subject to regulations and attainment goals and standards of the Sacramento Valley Air Basin, the ARB, and the California and U.S. Environmental Protection Agencies (EPAs). The California and U.S. EPAs, respectively, enforce the state and federal Clean Air Act standards. State and federal Clean Air Act air quality standards are presented in Table 3-1.

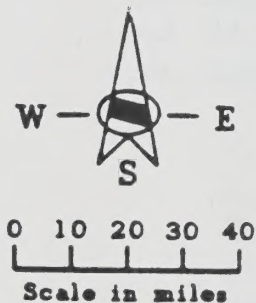


(See Figure 8A)

LEGEND:

- ☼ Gaseous and Particulate monitoring site.
- ★ Gaseous Pollutant monitoring only.
- ⊙ Particulate Sampling only.
- ARB operated site.
- Discontinued during year.
- ▽ Site relocated.
- ▲ New station that opened during the year.

SOURCE: AIR RESOURCES BOARD, SUMMARY OF 1991 AIR QUALITY DATA



SACRAMENTO VALLEY AIR BASIN

FIGURE
3-1



**TABLE 3-1
AMBIENT AIR QUALITY STANDARDS**

POLLUTANT	AVERAGING TIME	CALIFORNIA STANDARDS ¹		NATIONAL STANDARDS ²		
		CONCENTRATION ³	METHOD ⁴	PRIMARY _{3,5}	SECONDARY _{3,6}	METHOD _{4,7}
Ozone	1 Hour	0.09 ppm (180 ug/m ³)	Ultraviolet Photometry	0.12 ppm (235 ug/m ³)	Same as Primary Std.	Ethylene Chemiluminescence
Carbon Monoxide	8 Hour	9.0 ppm (10 mg/m ³)	Non-dispersive Infrared Spectroscopy (NDIR)	9 ppm (10 mg/m ³)	-	Non-dispersive Infrared Spectroscopy (NDIR)
	1 Hour	20 ppm (23 mg/m ³)		35 ppm (40 ug/m ³)		
Nitrogen Dioxide	Annual Average	-	Gas Phase Chemiluminescence	0.053 ppm (100 ug/m ³)	Same as Primary Std.	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 ug/m ³)		-		
Sulfur Dioxide	Annual Average	-	Ultraviolet Fluorescence	80 ug/m ³ (0.03 ppm)	-	Pararosaniline
	24 Hour	0.05 ppm (131 ug/m ³) ⁸		365 ug/m ³ (0.14 ppm)	-	
	3 Hour	-		-	1300 ug/m ³ (0.5 ppm)	
	1 Hour	0.25 ppm (655 ug/m ³)		-	-	



POLLUTANT	AVERAGING TIME	CALIFORNIA STANDARDS ¹		NATIONAL STANDARDS ²		
		CONCENTRATION ³	METHOD ⁴	PRIMARY _{3,5}	SECONDARY _{3,6}	METHOD _{4,7}
Suspended Particulate Matter (PM ₁₀)	Annual Geometric Mean	30 ug/m3	Size Selective Inlet High Volume Sampler and Gravimetric Analysis	-	-	-
	24 Hour	50 ug/m3		150 ug/m3	Same as Primary Stds.	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	-		50 ug/m3		
Sulfates	24 Hour	25 ug/m3	Turbidimetric Barium Sulfate	-	-	-
Lead	30 Day Average	1.5 ug/m3	Atomic Absorption	-	-	Atomic Absorption
	Calendar Quarter	-		1.5 ug/m3	Same as Primary Std.	
Hydrogen Sulfide	1 Hour	0.03 ppm (42 ug/m3)	Cadmium Hydroxide STRactan	-	-	-
Vinyl Chloride (chloroethene)	24 Hour	0.010 ppm (26 ug/m3)	Tedlar Bag Collection, Gas Chromatography	-	-	-
Visibility Reducing Particles	1 Observation	In sufficient amount to reduce the prevailing visibility ⁹ to less than 10 miles when the relative humidity is less than 70%		-	-	-

1. California standards for ozone, carbon monoxide, sulfur dioxide (1 hour), nitrogen dioxide and particulate matter - PM₁₀, are values that are not to be exceeded. The sulfates, lead, hydrogen sulfide, vinyl chloride, and visibility reducing particles standards are not to be equaled or exceeded.
2. National standards, other than ozone and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.



3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parenthesis are based upon a reference temperature of 25° C and a reference pressure of 760 mm of mercury. All measurements of air quality are to be corrected to a reference temperature of 25° C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent procedure which can be shown to the satisfaction of the Air Resources Board to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than three years after that state's implementation plan is approved by the Environmental Protection Agency.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within a "reasonable time" after the implementation plan is approved by the EPA.
7. Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.
8. At locations where the state standards for ozone and/or suspended particulate matter are violated. National standards apply elsewhere.
9. Prevailing visibility is defined as the greatest visibility which is attained or surpassed around at least half of the horizon circle, but not necessarily in continuous sectors.

Source: State of California, Air Resources Board, November, 1989.

Additional air quality regulation at the local level was provided by the Yuba County Air Pollution Control District (APCD) in Marysville. However, this agency was recently closed and its responsibilities were merged into the Feather River AQMD (William Schacht, Air Quality Specialist II, Feather River AQMD, pers. comm., September 1992).

The primary factors that affect air quality are the concentrations, types, and locations of pollutant emissions, regional topography and geography, and prevailing climatic conditions. An emissions rate is the amount of pollutant released into the atmosphere by a given source over a specified time period. Emissions *rates* are generally expressed in units such as pounds per hour (lbs/hr) or tons per year (t/yr). *Concentrations* of emissions, on the other hand, represent the amount of pollutant in a given space at any time. Concentration is usually expressed in units such as micrograms (i.e., thousandths of a gram) per cubic meter ($\mu\text{g}/\text{m}^3$), kilograms per metric ton (kg/t), or parts per million (ppm).



Local and regional weather conditions govern the transport and diffusion of emissions in the atmosphere. Wind speed and direction, atmospheric stability, temperature, and the presence or absence of inversions are some key factors that affect pollutant dispersion (QUAD Consultants, May 1992:12). As noted above, pollutants are carried by winds into Yuba County from the Sacramento and San Francisco Bay areas, and inversions often prevent them from dispersing.

The nearest air quality monitoring stations are located in the Agricultural Building at the Sutter County Fairgrounds and at Almond Street, both in Yuba City, directly west of Marysville. These stations monitor ozone (O₃) and airborne particulate matter (PM₁₀). Tables 3-2 and 3-3 summarize air quality data from these monitoring stations between 1983 and 1989 in relation to State and federal Clean Air Act standards.

TABLE 3-2
SUMMARY OF AIR QUALITY MONITORING IN YUBA CITY¹
1983-1990

POLLUTANT	YEAR	AVG. PERIOD	MAXIMUM CONCENTRATION	VIOLATION(S)
Ozone ²	1983 ⁶	1 hr.	.10 ppm	12
	1984 ⁶	1 hr.	.12 ppm	35
	1985 ⁶	1 hr.	.11 ppm	33
	1986 ⁶	1 hr.	.14 ppm	42
	1987 ⁶	1 hr.	.12 ppm	54
	1988 ⁶	1 hr.	.12 ppm	99
	1989 ⁶	1 hr.	.10 ppm	3
	1990	1 hr.	.10 ppm	2



POLLUTANT	YEAR	AVG. PERIOD	MAXIMUM CONCENTRATION	VIOLATION(S)
Total Suspended Particulates ^{4,5}	1983	24 hr.	141 $\mu\text{g}/\text{m}^3$	5
		Annual	40 $\mu\text{g}/\text{m}^3$	yes
	1984	24 hr.	116 $\mu\text{g}/\text{m}^3$	5
		Annual	53 $\mu\text{g}/\text{m}^3$	yes
	1985	24 hr.	136 $\mu\text{g}/\text{m}^3$	11
		Annual	65 $\mu\text{g}/\text{m}^3$	yes
	1986 ⁶	24 hr.	138 $\mu\text{g}/\text{m}^3$	2
		Annual	18 $\mu\text{g}/\text{m}^3$	no
	1987 ⁶	24 hr.	163 $\mu\text{g}/\text{m}^3$	15
		Annual	71 $\mu\text{g}/\text{m}^3$	yes

Notes:

- 1 Agriculture Building Monitoring Station
- 2 The national one-hour standard for ozone is 0.12 parts per million (ppm), and the State standard is 0.09 ppm, except for 1983-1987, whereby the State standard is 0.10 ppm. Exceedances of the national standard for ozone are not violations unless they occur for more than one day. Each exceedance of the State standard for ozone is considered a violation.
- 4 The national 24-hour standard for Total Suspended Particulates (TSP) from 1988-1989 is 150 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), and the annual arithmetic mean is 50 $\mu\text{g}/\text{m}^3$. The national 24-hour standard for TSP from 1983-1987 is 260 $\mu\text{g}/\text{m}^3$ and the annual geometric mean is 75 $\mu\text{g}/\text{m}^3$. The State 24-hour standard for TSP is 50 $\mu\text{g}/\text{m}^3$ and the annual geometric mean is 30 $\mu\text{g}/\text{m}^3$.
- 5 The primary and secondary TSP national ambient air quality standards were rescinded in July 1987. The TSP particulate standards were replaced with standards for 10 micron diameter particles (PM_{10}).
- 6 Data presented is valid, but incomplete in that an insufficient number of valid points were collected to meet EPA and/or ARB criteria for representativeness.

Source: California Air Resources Board, California Air Quality Data, Summary, 1985-1990.



TABLE 3-3
24 HOUR MAXIMUM CONCENTRATION FOR PM-10¹
1985-1990²

YEAR	AVERAGING PERIOD	MAXIMUM CONCENTRATION	VIOLATION(S) ³
1985	24 hr.	78 $\mu\text{g}/\text{m}^3$	10
	Annual	36 $\mu\text{g}/\text{m}^3$	yes
1986	24 hr.	98 $\mu\text{g}/\text{m}^3$	9
	Annual	33 $\mu\text{g}/\text{m}^3$	yes
1987	24 hr.	86 $\mu\text{g}/\text{m}^3$	16
	Annual	35 $\mu\text{g}/\text{m}^3$	yes
1988	24 hr.	109 $\mu\text{g}/\text{m}^3$	11
	Annual	37 $\mu\text{g}/\text{m}^3$	yes
1989	24 hr.	96 $\mu\text{g}/\text{m}^3$	8
	Annual	31 $\mu\text{g}/\text{m}^3$	yes
1990 ⁴	24 hr	96 $\mu\text{g}/\text{m}^3$	16
	Annual	35.5 $\mu\text{g}/\text{m}^3$	yes

Notes:

¹ Particulate matter smaller than 10 microns in diameter.

² Agriculture Building Monitoring Station.

³ The national 24-hour standard is 50 $\mu\text{g}/\text{m}^3$ (micrograms per cubic meter), and the annual geometric mean is 20 $\mu\text{g}/\text{m}^3$.

⁴ Almond Street Monitoring Station.

Source: California Air Resources Board, California Air Quality Data, Summary, 1985-1990.



Pollutants for which there are U.S. Environmental Protection Agency (EPA) threshold standards (i.e., standards above which these pollutants are known to affect human health) are known as "criteria pollutants." Non-attainment of any of these emissions standards for any pollutant for more than one day per year is considered to be a significant air quality impact. The Feather River AQMD is designated as a "serious" non-attainment area for federally mandated ozone standards. It is also designated by the State as a non-attainment area for ozone and particulate matter (PM₁₀).¹ The Feather River AQMD is in attainment for PM₁₀ at the federal but not the State level, because California Clean Air Act standards are stricter than federal Clean Air Act Standards (see Table 3-1).

Although the Feather River AQMD is a "serious" non-attainment area for federal ozone standards, it also is considered to be in "transitional attainment." Transitional status is granted in districts where the federal standard has not been exceeded for a three year period. However, it is anticipated that the standard will be exceeded again in the future, because air quality in Yuba County is influenced by the transport of pollutants from the Sacramento and San Francisco Bay areas (R. C. Fuller Associates 1992:E-2).

Ozone is a criteria pollutant, because high concentrations of ozone have been linked to pulmonary and respiratory damage in humans, reduced crop yields, and damage to coniferous forests (R. C. Fuller Associates 1992:E-2). Ozone forms as a result of the interaction between atmospheric gases and ultraviolet light. Many of these reactive gases are emitted by automobiles, fires (including agricultural and yard burning, wildland fires, wood stoves, fireplaces), and industrial processes. These gases, such as nitrous and sulfurous oxides (NO_x and SO_x), are known as ozone precursors.

Automobile emissions are among the known sources of ozone precursors, which are gases that will produce ozone under certain conditions. For this reason, programs aimed at attaining state and federal ozone standards often

¹ PM₁₀ is inhalable airborne particulate matter with a diameter of 10µm (i.e., micrometers or microns — one-millionth of one meter) or less. Larger particles are generally less aerodynamic and less likely to remain airborne. Therefore, larger particles are not considered to be a potential inhalation hazard.



target vehicular emissions, which can be reduced through state inspection programs, higher emissions standards for new vehicles, and reductions in vehicle miles traveled (VMT) through car-pooling, mass public transit, bicycles, and other means.

PM₁₀ or suspended particulate matter appears to come from many sources, and its composition is variable. Agricultural activities often create dust that becomes airborne, which is composed of soil particles, particles of vegetation, and pesticide residues. Rice burning causes silica to become airborne, which is particularly harmful to lungs. Effects of inhalation can range from temporary eye irritation to emphysema or lung cancer, depending on the amount and duration of exposure (R. C. Fuller Associates 1992:E-6). Rice burning is discussed in some detail below.

A distinction is normally made between mobile and stationary emissions sources. Mobile sources are primarily motor vehicles, which as noted, emit ozone precursors (i.e., automobiles are indirect sources of ozone). Stationary sources include industrial facilities, home furnaces and wood burning appliances, agricultural fields, waste disposal and treatment facilities, and many others. Emissions from mobile sources cannot generally be measured directly. Therefore, a variety of computer models are commonly employed to estimate mobile source emissions by manipulating weather data, vehicle miles traveled, and other variables.

3.2.2 Agricultural Waste Burning

Rice straw burning, along with the burning of other agricultural wastes, such as orchard trimming wastes, currently occurs within Yuba County and is thought to be a major contributor to non-attainment for PM₁₀. University of California, Davis researchers have recently developed experimental methods for estimating emissions associated with rice straw burning (Jenkins et. al. 1990). These emissions are expressed in kilograms per metric ton (kg/t). For determining offset allowances, which are commonly used to mitigate impacts, particularly when ricelands are converted to urban uses, it is more practical to express emissions in terms of kilograms of each pollutant emitted per acre (kg/ac). Expressing emissions in kg/ac will make it possible to estimate the amount of each pollutant that would have been emitted each year as a result



of rice straw burning for each acre of land that is converted from rice growing to other uses.

Title 17 of the California Code of Regulations states that an average of nine pounds of PM_{10} is emitted per English or short ton (i.e., 2,000 pounds) of rice straw burned (4.08kg/T), which is roughly equivalent to 27 pounds of PM_{10} emissions per acre of rice straw burned (12.25kg/ac). These figures enable the computation of a conversion factor to convert kg/t to kg/ac as follows:

$$4.08\text{kg/T} \approx 12.25\text{kg/ac}$$

Converting to the metric system:

$$4.50\text{kg/t} \approx 12.25\text{kg/ac}$$

$$\text{Therefore: } 1\text{kg/t} \approx 2.72\text{kg/ac (i.e., } 12.25 \times 4.50)$$

$$\text{Thus: } 2.72(\text{kg}_e/\text{t}) = \text{kg/ac}$$

where:

2.72 is a constant factor

kg_e = the amount of pollutant emitted in kilograms

T = 1 English or short ton (i.e., 2,000 pounds)

t = 1 metric ton (i.e., 2,200 pounds)

kg/ac = kilograms emitted per acre

Following is an example of the application of the conversion factor. According to experiments by Jenkins et al. (1990), the average amount of carbon monoxide (CO) emitted by the burning of one metric ton of rice straw is 60.44kg/t. Applying the conversion factor yields:

$$2.72(60.44\text{kg/t}) = 164.40\text{kg/ac}$$

Thus, it can be estimated that the annual burning of one acre of rice straw will result, on the average, in the emission of about 164 kilograms of CO.



Table 3-4 below shows experimental emissions factors of particulates, several ozone precursor gases, and other emissions from rice straw combustion converted from average kg/t (Jenkins et al, 1990:Table 4) to kg/ac using the conversion factor derived above. It must be kept in mind that the estimated emissions from rice straw burning shown in Table 3-4 were derived experimentally. Actual emissions can vary as a result of a number of factors, including fuel moisture, fuel mass, atmospheric humidity, feed rate, wind

TABLE 3-4
RICE STRAW BURNING EMISSIONS FACTORS

POLLUTANT	EMISSIONS FACTOR (Kg/t) ¹	EMISSIONS FACTOR (Kg/ac) ²
Particulate Matter	3.31	9.00
NO	1.16	3.16
NO ₂	0.46	1.25
NO _x (as NO ₂)	2.24	6.09
SO ₂	0.16	0.44
CH ₄	1.27	3.45
C ₂ H ₂	0.09	0.24
C ₂ H ₄	0.64	1.74
C ₂ H ₆	0.07	0.19
C ₆ H ₆	0.12	0.33
CO	60.44	164.40
CO ₂	1,178.00	3,204.00

¹ Kilograms per metric ton. Source: Jenkins et al. (1990: Table 4).

² Kilograms per acre derived by multiplying the value in column 2 by the constant 2.72.
Source: QUAD Consultants, 1992.



speed, and other factors. The numbers in Table 3-4 are provided in this document to demonstrate a potential basis for estimating emissions offset factors for land use proposals that would convert rice growing land within the county to other uses.

Assembly Bill 1378 (Connelly-Areias-Chandler 1991) amended the California Health and Safety Code to place limitations on rice straw burning in the Sacramento Valley Air Basin. This law requires the partial phasing out of rice straw burning beginning in 1992 by limiting the number of acres that can be burned to 90 percent of the total number of acres planted prior to September 1 and decreasing the allowable percentage each year to 25 percent by 1999. Beginning in 2000, conditional rice straw burning permits may be issued, but the maximum annual amount that can be burned is 25 percent of the planted total or 125,000 acres, whichever is less, for the entire Basin.

AB 1378 also specifies that reductions in emissions from rice straw burning qualify for air emissions offsets. Offset credits must meet requirements of State law and air management district rules and regulations and comply with applicable district banking rules established pursuant to Sections 40709 to 40713 of the Health and Safety Code. The seasonal and intermittent nature of rice straw burning will be considered by the District in determining offset credits. However, emission reduction credits that would otherwise accrue from reductions in emission from rice straw burning shall not be affected or negated by the phasedown of burning described in the previous paragraph.

The Feather River AQMD produces an annual Agricultural Burning Plan. The current plan includes emissions factors for Sacramento Valley rice straw burning for the first time. These or other emissions factors, such as those demonstrated above, may potentially serve as a basis for calculating offset banking rules for situations in which rice growing lands are converted to other uses (Ken Corbin, Air Pollution Control Officer, Feather River AQMD, pers. comm., September 1992). The AQMD does not presently require offsets for indirect sources. For most land uses proposed in this air basin, the Feather River AQMD expects developers to apply all available and feasible air emissions mitigation measures, recognizing that significant cumulative impacts may nevertheless occur. When offset banking regulations are formulated by the AQMD, these land use proposals may be able to take advantage of them



to further reduce project-related emissions (Ken Corbin, pers. comm., March 1992).

3.2.3 Northern Sacramento Valley Air Basin 1991 Air Quality Attainment Plan

AB 2595 (1988), the California Clean Air Act, requires that each local or regional air quality district that is in non-attainment of State Ambient Air Quality Standards for ozone or carbon monoxide submit an attainment plan by July 1991. The plans must include a wide range of control measures with the objective of reducing vehicle trip generation and VMT to lower overall emissions by a net five percent per year from 1987 levels. Yuba County coordinated with Shasta, Tehama, Butte, Glenn, Colusa, and Sutter counties to prepare a regional attainment plan.

The *Air Quality Attainment Plan* for the Northern Sacramento Valley Air Basin (NSVAB) is designed to achieve a reduction in district-wide emissions of five percent or more per year for each non-attainment pollutant or its precursors, averaged every consecutive 3-year period. By law, the five percent requirement is calculated against the 1987 actual emission level of each non-attainment pollutant or its precursor. This Plan has classified the NSVAB non-attainment status of ozone as "moderate" and assumes a "moderate" classification for PM₁₀ until clarified by the Air Resources Board.

According to the Plan, it does not demonstrate a five percent reduction of the pollutant levels, because the control efficiencies and cost-effectiveness are not available for many of the proposed control strategies. The Plan states that it does, however, include every feasible control measure and a schedule of adoption for the control measures.

According to the Plan, Yuba County must reduce reactive organic gases (ROG) emissions by 4.17 tons per day and nitrogen oxides (NO_x) emissions by 2.66 tons per day by 1994 in order to comply with the California Clean Air Act. ROG and NO_x are ozone precursors. The County must reduce ROG emissions by 5.96 tons per day and NO_x emissions by 3.80 tons per day by 1997, ROG emissions by 7.75 tons per day and NO_x emissions by 4.94 tons per day by 2000.



The Plan contains proposed community contact, educational and public information elements designed to reduce emissions from transportation and area wide sources. The Plan also contains a list of feasible control measures (Table 3-5) that are proposed to be implemented according to the following schedule:

1. All measures ranked #1 shall be proposed and implemented by applicable Districts no later than July 1, 1992.
2. All measures ranked #2 shall be proposed and implemented by applicable Districts no later than July 1, 1993.
3. All measures ranked #3 shall be proposed and implemented by applicable Districts no later than July 1, 1994, only if attainment of the State ambient air standard for ozone is not achieved by January 1, 1994.
4. All measures ranked #4 shall be proposed and implemented no later than July 1, 1995.
5. All measures ranked #5 shall be proposed and implemented no later than July 1, 1996.

The ranking of feasible control measures is based upon technical feasibility, cost-effectiveness, emission reduction potential, rate of emission reductions, public acceptability, and enforceability. The control measures include a new source review rule (requirements for permitting new and modified stationary sources of air pollution), "indirect" source review ("indirect" sources are those that generate or attract motor vehicle activity, including shopping centers, residential and commercial developments, government buildings, medical facilities, office buildings, hospitals, hotels, restaurants, etc.), and transportation control measures.

Attainment of state and federal air quality standards in Yuba County is complicated by the fact that a large proportion of the pollutants are transported from the Sacramento and San Francisco Bay areas. Local major contributions of emissions are thought to be from the burning of agricultural



TABLE 3-5
NORTHERN SACRAMENTO VALLEY AIR BASIN,
1991 AIR QUALITY ATTAINMENT PLAN

LIST OF FEASIBLE MEASURES FOR STATIONARY SOURCES

CONTROL MEASURES	APPLICABLE DISTRICTS	ADOPTION SCHEDULE RANKING	*CONTROL EFFICIENCY	*COST EFFECT
New source review, Indirect source review				
New source review measures	All	1	No Calc	No Calc
Indirect source review measures	All extent varies	1	No Calc	No Calc
Transportation control measures	All extent varies	1	No Calc	No Calc
NO_x related control measures				
Cement Kilns	Shasta	2	50%	\$2000 /Ton
Crude oil pipeline heaters	N/A	N/A	N/A	N/A
Electric utility gas turbines	All	3	60%	\$7500 /Ton
Glass melting furnaces	All	5	45%	\$4000 /Ton
Industrial boilers	All	2	50%	\$9000 /Ton
Internal combustion engines	All	2	70%	\$1000 /Ton to \$5000 /Ton
Oil field steam generators	N/A	N/A	N/A	N/A
Refinery heaters and boilers	N/A	N/A	N/A	N/A
Residential space heating	All	4	No Calc	No Calc



CONTROL MEASURES	APPLICABLE DISTRICTS	ADOPTION SCHEDULE RANKING	*CONTROL EFFICIENCY	*COST EFFECT
Residential water heating	All	4	No Calc	No Calc
Utility boilers (elec. power generation)	All	1	40%	\$9000 /Ton
ROG related control measures				
Aerospace coatings	N/A	N/A	N/A	N/A
Aircraft fuel transfer into storage tanks	All	1	40%	\$2000 /Ton
Architectural coatings	All	3	50%	\$2000 /Ton
Automobile finish coatings	All	3	25%	\$2000 /Ton
Automobile assembly coatings	N/A	N/A	N/A	N/A
Can and coil coatings	All	5	5%	\$2000 /Ton
Cleaning of organic product storage tanks	All	4	95%	No Calc
Coating of metal parts and products	All	3	25%	\$2000 /Ton
Coating of plastic parts	All	3	25%	\$2000 /Ton
Commercial bakeries	N/A	N/A	N/A	N/A
Commercial charbroilers	All	4	90%	\$25000 /Ton
Commercial and industrial adhesives	All	5	70%	\$2000 /Ton
Control of emissions from cyclic oil production wells	N/A	N/A	N/A	N/A
Control of emissions from steam driven oil production wells	N/A	N/A	N/A	N/A



CONTROL MEASURES	APPLICABLE DISTRICTS	ADOPTION SCHEDULE RANKING	*CONTROL EFFICIENCY	*COST EFFECT
Covers for sumps, pits, and wastewater processing equipment	All	4	90%	\$3000 /Ton
Cutback asphalt	All	1	50%	No Calc
Disposal of organic wastes	All	2	90%	No Calc
Factory surface coating of flatwood paneling	All	4	No Calc	No Calc
Flexible disc manufacturing	All	5	No Calc	No Calc
Floating roof storage tanks	All	1	40%	\$2000 /Ton
Fugitive emission from industrial processes (includes synthetic organic; chemical manufacturing industries, petroleum refining, oil/gas production, gas plants, etc)	All	3	70%	\$1000 /Ton
Gas collection system for sanitary landfills	All	3	No Calc	No Calc
Graphic arts (rotogravure & flexography)	All	3	30%	No Calc
Kelp processing plants	N/A	N/A	N/A	N/A
Marine coatings	All	4	No Calc	No Calc
Marine vessel ballasting and housekeeping	N/A	N/A	N/A	NA/A
Marine vessel loading operations	N/A	N/A	N/A	N/A



CONTROL MEASURES	APPLICABLE DISTRICTS	ADOPTION SCHEDULE RANKING	*CONTROL EFFICIENCY	*COST EFFECT
Metal furniture and fixture coating operations	All	3	25%	\$2000 /Ton
Natural gas/gasoline processing plants	All	5	No Calc	No Calc
Organic chemical manufacturing	All	5	60%	\$2000 /Ton
Petroleum solvent dry cleaning operations	N/A	N/A	N/A	N/A
Pharmaceutical manufacturing	N/A	N/A	N/A	N/A
Polyester resin operations	All	2	No Calc	No Calc
Polymer resin manufacturing	N/A	N/A	N/A	N/A
Refinery vacuum producing systems, wastewater separators and process unit turnarounds	N/A	N/A	N/A	N/A
Rubber tire manufacturing	N/A	N/A	N/A	N/A
Semiconductor manufacturing Operations	All	5	80%	\$4000 /Ton
Soil decontamination containing VOCs	All	2	No Calc	No Calc
Solvent degreasing	All	2	40%	\$2000 /Ton
Surface coatings of paper and fabrics	All	4	No Calc	No Calc
Synthetic solvent dry cleaning operations	N/A	N/A	N/A	N/A



CONTROL MEASURES	APPLICABLE DISTRICTS	ADOPTION SCHEDULE RANKING	*CONTROL EFFICIENCY	*COST EFFECT
Vapor recovery systems for gasoline distributors (includes terminals, bulk plants, storage tanks, tank trucks, rail car loading)	All	3	40%	\$2000 /Ton
Vegetable oil manufacturing	All	5	No Calc	No Calc
Wood furniture manufacturing coatings	All	4	20%	\$2000 /Ton
NSVAB AgBurn Plan	All	1	No Calc	No Calc
Multiple and other pollutant (SO_x, CO, PM) control				
Clean fuel for fleets (NO _x , SO _x , CO, PM, ROG)	ARB	N/A	N/A	N/A
Fluid catalytic cracking units (SO _x)	N/A	N/A	N/A	N/A
Marine vessel operations (SO _x , ROG)	N/A	N/A	N/A	N/A
Petroleum coke calcining (SO _x)	N/A	N/A	N/A	N/A
Residential wood combustion (CO, ROG, PM)	All	1	No Calc	No Calc
Sulfur content in fuel (SO _x)	N/A	N/A	N/A	N/A

*References for Control Efficiency and Cost Effectiveness - 3/18/91 Draft Bay Area Air Quality Management District Clean Air Plan, "Candidate Control Measure Description".

Adoption Schedule Ranking for feasible control measures:



wastes, spraying of pesticides and herbicides over large agricultural areas, and motor vehicles. Not to be overlooked as a major contributor to pollutant emissions are wildland fires and the controlled burning of timber harvesting wastes. Wildland fires have devastated large tracts of California throughout history, but they have been especially destructive during the drought, which in 1992, was in its sixth year.

3.2.4 Protection and Enhancement of Yuba County Air Quality

Local air quality management districts, including the Feather River AQMD, that are within the Northern Sacramento Valley Air Basin and subject to the Basin-wide *Air Quality Attainment Plan*, are required to formulate local attainment plans. Air quality control measures have traditionally been applied only to "direct" sources of air pollution: mobile sources (primarily motor vehicles) and stationary sources (such as factories). The California Clean Air Act, through regional and local air quality attainment plans, extends local control measures to "indirect" sources of air pollution. The policies that the Feather River AQMD will adopt, including direct source, indirect source, and transportation control measures, must both be compatible with the Basin-wide *Attainment Plan* and specifically appropriate to air quality conditions in the Feather River AQMD's area of jurisdiction.

Indirect source control measures focus on disincentives to developments that are dependent on the private automobile, that discourage alternative forms of transportation, and that are not contiguous to existing development. Such measures should encourage compact, higher density and infill development; use of mass transit, bicycle and pedestrian transportation; and the location of residences close to shopping and places of employment. The urban boundary concept discussed in Section 8.5 of this Paper encourages compact development. Other control measures for all sources will include air quality offsets, emission reduction credits, and application of Best Available Control Technology (BACT).

The Feather River AQMD has not formally adopted indirect source control measures and transportation control measures, but it has circulated to counties and cities within its jurisdiction a proposed *Air Quality Element*. Included in this proposed *Air Quality Element* are both indirect source control measures, in the form of objectives and policies, and transportation control



measures. Given the fact that, by definition, indirect sources include those projects that encourage the use of motor vehicles, indirect source control measures and transportation control measures will be treated alike by the AQMD. Also included in the proposed *Air Quality Element* are "trigger" levels for certain pollutants. When these levels are to be exceeded, the project must incorporate Best Available Mitigation Measures (BAMM) as provided and periodically updated by the AQMD. The Feather River AQMD is considering adopting the draft *Air Quality Element* as its general policy on indirect sources and encourages Yuba County and other jurisdictions within the District to incorporate the *Air Quality Element* into general plan updates. If both the Feather River AQMD and Yuba County adopt this *Air Quality Element*, they will have compatible general policies for indirect source control and transportation control measures. Additionally, the Feather River AQMD will adopt more specific air quality mitigation measures for indirect sources that can be applied at the project stage for projects that exceed trigger levels (Ken Corbin, Pollution Control Officer, Feather River AQMD, pers. comm., August, October, and November 1992). The Feather River AQMD's draft *Air Quality Element* is included as Appendix A.

The NSVAB *Air Quality Attainment Plan* suggests that local indirect source rules may include a requirement for "Best Available Mitigation Measures" for large projects, mitigation fees, review fees, and offset requirements. Mitigation fees will be linked to emissions resulting from motor vehicle trips and will be used to reduce mobile source emissions.

Offsets are intended to permit growth and expansion of industry in non-attainment areas that are progressing toward attainment. Many industrial facilities and other emitters must obtain air quality permits to construct and operate their facilities. The operating permit specifies the maximum amounts of certain pollutants that can be emitted by the facility in a given period of time. If and when these facilities cease to operate, the proponents of newly proposed projects can apply for offset allowances that, in effect, allow them to emit a portion of certain pollutants that the company closing its operations is allowed to emit under its operating permit. Offsets are almost never granted for the full permitted amount issued to the original source. Therefore, the net effect is a reduction in the maximum *permitted* amount of that pollutant.



A recent court ruling, (*El Pueblo Para El Aire Y Agua Limpio v. Kings County*, CA 3, No. C 014017, July 21, 1992), held that purchasing emissions offsets to comply with no-net-increase rules is insufficient to ensure that a project will not result in significant air quality impacts in non-attainment areas. In other words, emissions offsets were judged not to qualify as mitigation measures in EIRs. The judge in the case, which involves a proposed hazardous waste incinerator, wrote, "The emission offsets were not designed as a means of mitigating significant air quality impacts" (Bureau of National Affairs 1992(2):442-443). This ruling would be precedent-setting only if it is upheld by the appellate process.



SECTION FOUR HYDROLOGICAL CONDITIONS



SECTION FOUR HYDROLOGICAL CONDITIONS

4.1 SURFACE HYDROLOGY

Except as otherwise cited, the information in this subsection derives from the *Yuba County General Plan, Open Space and Conservation* and *Land Use* elements (County of Yuba 1973, 1988).

Surface hydrology includes all surface water resources, such as streams and rivers, reservoirs, and artificial waterways. Major surface hydrological features (waterways) of Yuba County are shown on Figure 4-1. Some topics that relate to surface hydrology are covered elsewhere in this document under other headings. Hydroelectric power generation is discussed in the section on Energy (Section 17). Irrigation and water districts are discussed in Section 13.6.1, "Water Suppliers."

4.1.1 Rivers and Other Surface Waters

The primary drainages in Yuba County include the Bear, Yuba, and Feather rivers and Honcut Creek and their tributaries. These waterways all originate in the Sierra Nevada Mountains and generally drain to the southwest in the mountains and foothills and southward in the Valley. These waters ultimately join the Sacramento River, which in turn, joins the San Joaquin River near Pittsburg in Contra Costa County. The combined flows of these two river systems flow into Suisun Bay, through the Carquinez Strait, into San Pablo Bay, San Francisco Bay, and the Pacific Ocean. Because Yuba County's waterways drain into the ocean, anadromous¹ fish, including species of salmon, steelhead, and shad, are present in Yuba County (see Section 5.0).

Major reservoirs in the county include Englebright, Merle Collins, New Bullards Bar, and Camp Far West. Other reservoirs include Lake Francis, Lake Mildred, and Slate Creek Reservoir.

¹ *Anadromous* species spend at least part of their life span in the ocean.



There are three basic types of streams. *Ephemeral* streams drain only surface water runoff during the rainy season and dry up soon after the rainy season ends. *Intermittent* streams drain surface water and discharge of high ground water levels, allowing flows partially into the drought season, which occurs between about May and October. *Perennial* streams drain surface water and have permanent sources of ground water discharge, allowing year-round flow.

Most of the reservoirs were created for the primary purpose of hydroelectric power generation, although they often fulfill several purposes. Among these are flood control, water supply, and recreation.

Major county surface water features are described as follows:

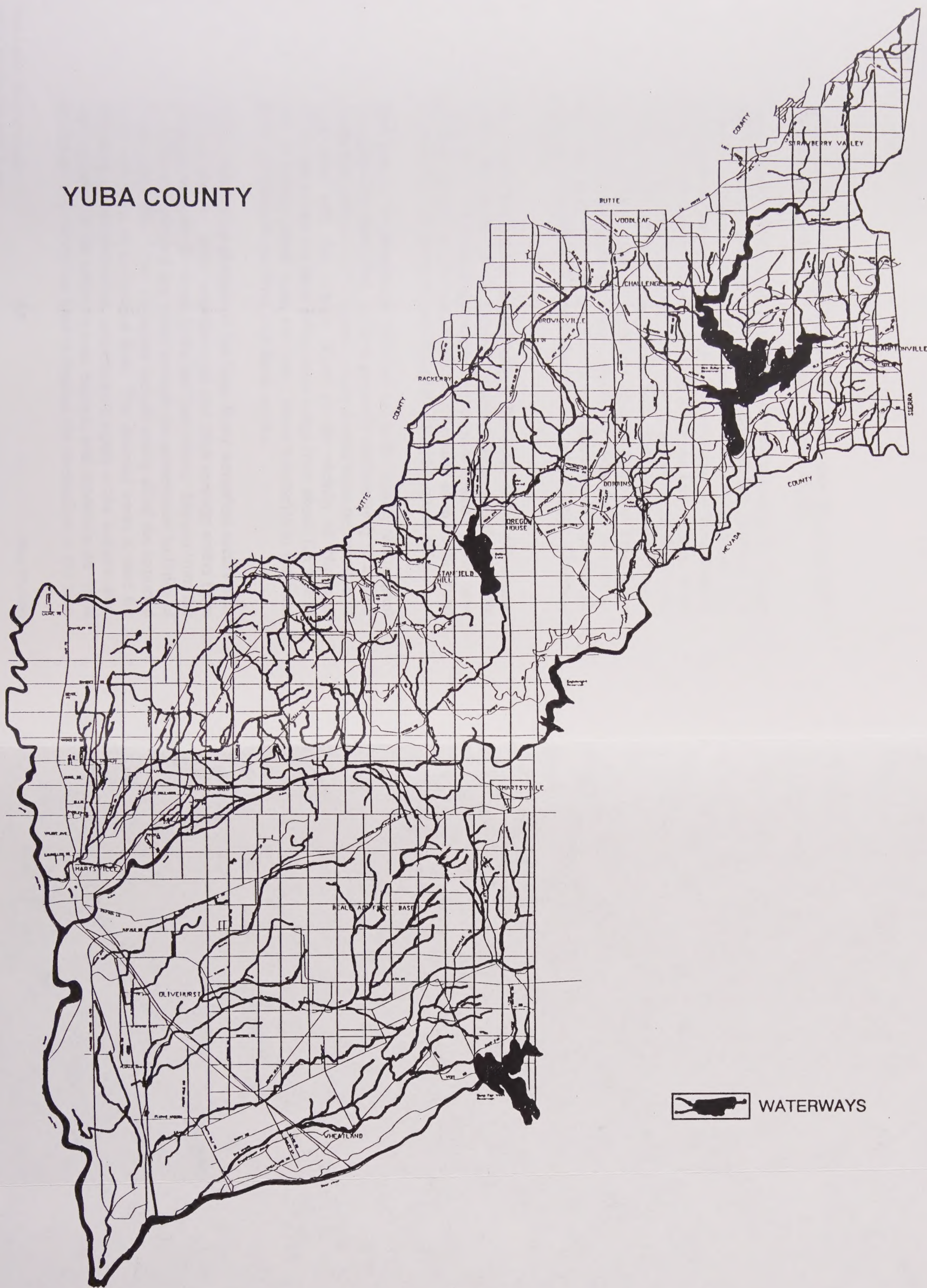
Feather River – This river drains an area of 3,611 square miles above Oroville Dam in Butte and Plumas counties. Between Oroville and Marysville, the Feather River drains an area of 369 square miles, flowing southerly through relatively flat or gently rolling terrain for 39 miles.

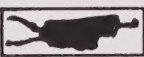
North and South Honcut Creeks – These principal tributaries to the Feather River between Marysville and Oroville drain about 78 square miles of lower foothill and valley areas east of the Feather River.

Jack and Simmerly Sloughs – These streams are bordered by levees in places to confine them to their channels during flood season. They drain about 55 square miles north of Marysville between the left bank levee of the Feather River and the right bank levee of the Yuba River. Most of the area drained by the sloughs is rice growing land, which is seasonally flooded.

Yuba River – This river drains the western slope of the Sierra Nevada and flows generally southwesterly to its confluence with the Feather River at Marysville. Elevations within the Yuba River drainage basin vary from approximately 265 feet at the Smartville gage site to over 9,100 feet at Castle Peak. In its upper reaches, much of the Yuba River basin lies in Sierra and Nevada counties. Major tributaries of the North Yuba River include Slate, Canyon, Goodyears, and Haypress creeks and Downie River. Oregon, Kanaka, and East Fork creeks drain into the Middle Yuba River. Major South Yuba River

YUBA COUNTY



 WATERWAYS



Source: De Lorme Mapping Company, Northern California Atlas and Gazetteer, 1988



tributaries include Fordyce, Texas, Fall, Canyon (not the same as the one draining into the North Yuba), and Poorman creeks.

The main stem of the Yuba River forms at the juncture of the Middle and North Yuba rivers just south of New Bullards Bar Reservoir and is joined by the South Yuba River just a few miles downstream near Bridgeport in Nevada County, about one mile east of Yuba County. Principal tributaries to the main Yuba River are Deer Creek, which joins the river near Smartville from the east, and (French) Dry Creek, which enters from the northeast at the Yuba Gold Field north of Beale Air Force Base. Most of the water exported from the Yuba River basin is diverted from the Middle and South Yuba rivers headwaters into the Bear River watershed through facilities of the Nevada Irrigation District (NID) and Pacific Gas and Electric Company (PG&E).

The North Yuba River above Bullards Bar Dam drains 480 square miles. The portion of the Yuba River above the proposed Marysville Dam, which is now no longer under serious consideration, would have drained an area of 1,324 square miles. The main stem of the Yuba River in the Marysville vicinity drains about 1,300 square miles.

Bear River – Headwaters for this river are in the vicinity of Emigrant Gap and Lake Spaulding. It flows generally southwesterly to a point about eight miles north of Auburn, where it turns more westward to its confluence with the Feather River in the vicinity of Nicolaus. Elevations within the Bear River basin range from about 125 feet to over 5,700 feet above mean sea level. Major tributaries to the Bear River are Greenhorn, Wolf, and Rock creeks.

Major importation of water to the Bear River watershed occurs near the headwaters. Some irrigation spill and ditch seepage enters from the ridge between the South Yuba and Bear rivers. Exports from the Bear River watershed are made through the conveyance facilities of PG&E and NID. These diversions include nearly all of the imported water and some of the natural flow. The diverted water is used for irrigation, power generation, and domestic supply in the Auburn area. The net effect of the upstream uses, exports, and imports in the Yuba and Bear river basins has been to deplete the streamflow at the base



of the foothills. In recent years, the average amount diverted has been above 44,000 acre feet, seasonally. This amount mostly affects the Yuba River at Smartville; the average depletion of the Bear River above Wheatland is relatively minor due to the imports of water further upstream from the Yuba River basin.

Dry Creek – This tributary to the Bear River lies between the Main Yuba and Bear rivers. It is not to be confused with the Dry Creek (also called French Dry Creek) that drains into the Yuba River north of Beale Air Force Base. There are many "Dry Creeks" in the Sierra Nevada gold country, which were named in reference to the fact that little or no gold was found along them. The name has nothing to do with the amount of water these creeks convey. Dry Creek drains a portion of the foothills, including Beale Air Force Base and the area directly to the east (i.e., around Spenceville).

Imports into the Dry Creek watershed occur as spills and flows of irrigation water delivered via the Tarr Ditch System from the Wolf Creek drainage in Nevada County, about 10 miles north of Auburn. This imported water, which averages about 11,200 acre feet, is considerable in relation to the total runoff from this drainage basin.

(French) Dry Creek – This creek is shown simply as "Dry Creek" on USGS topographic maps. It lies on the western drainage boundary of the Yuba River and drains an area of 109 square miles. An estimated 3,700 acre feet of water is seasonally exported from this basin through the Carmichael Ditch to the Honcut Creek watershed.

Some of the following information regarding Yuba County's four major reservoirs was provided by Nancy Jones, Yuba County Water Agency, (pers. comm., October 1992).

Englebright Reservoir – This reservoir on the main Yuba River has a storage capacity of 70,000 acre-feet. It is operated by the U.S. Army Corps of Engineers.

Merle Collins Reservoir – This reservoir has a capacity of 57,000 acre-feet. Created by damming (French) Dry Creek, the reservoir is owned by Browns Valley Irrigation District (BVID).



New Bullards Bar Reservoir – This largest of Yuba County's reservoirs has a storage capacity of 960,000 acre-feet. It was built on North Yuba River just above its confluence with the Middle Yuba River. It is owned by Yuba County Water Agency.

Camp Far West Reservoir – This reservoir is fed primarily by Bear River, although Rock Creek and other minor tributaries flow into it. Owned by South Sutter Irrigation District, headquartered in Trowbridge, near Nicolaus in eastern Sutter County, this reservoir has a capacity of 103,000 acre-feet.

4.1.2 Surface Water Quality

The National Pollutant Discharge Elimination System (NPDES) is a program of the U.S. Environmental Protection Agency, which in California is administered by the State Water Resources Control Board through the Regional Water Quality Control Boards (RWQCBs). The purpose of NPDES is to regulate discharges of pollutants into surface water sources to the greatest feasible extent through such measures as erosion control plans and drainage collection, storage, and treatment systems.

Creation of impervious ground surfaces through construction of pavements and buildings leads to excessive surface runoff during storms where natural ground surfaces had acted to absorb or slow this runoff. In urban areas, pollutants from motor vehicles, including petroleum hydrocarbons, glycol (from radiator coolants and anti-freezes), and dissolved heavy metals, such as lead and zinc from automotive batteries, often are deposited on pavements. Storm water runoff picks up these pollutants, and without proper controls, carries them into streams and lakes.

Pollutants can reach surface waters in the form of pesticide and fertilizer residues or other hazardous substances from agricultural lands. Other potential sources of surface water pollution include sewage and leachate (i.e., liquids that leach from solid waste landfills) that reach surface water via contaminated groundwater.

A new permitting program of NPDES, governed by the recently promulgated Section 402(p) of the Clean Water Act, will take effect in California late in 1992 or early in 1993. This program, which is intended to control pollutants



in storm water runoff, will require a Section 402(p) permit for most new developments that exceed five acres. The permitting process requires preparation and implementation of a storm water management plan that meets the approval of the appropriate RWQCB.

Another mechanism to ensure surface water quality at the state level is the *California Inland Surface Waters Plan: Water Quality Control Plan for Inland Surface Waters of California* (State of California, Water Resources Control Board 1991). The Plan, adopted in 1991 under State Water Resources Control Board Resolution 91-33, governs all inland surface waters and enclosed bays and estuaries. The Plan was intended to comply with requirements of the federal Clean Water Act in accordance with California Water Code Section 13170 and Section 303(c)(1) of the Clean Water Act. The Plan is also intended to be in conformance with requirements of CEQA.

The *California Inland Surface Waters Plan* includes water quality objectives and toxicity reduction requirements in connection with such undertakings as treated wastewater discharges and agricultural drainage. Among provisions of the Plan are to reclaim water resources, such as treated effluent from wastewater treatment facilities, to augment natural water supplies or recharge ground water aquifers. Other provisions govern performance goals and water quality monitoring. Among the beneficial uses prescribed for reclaimed water are enhancement of aquatic habitats, recreational opportunities, and irrigation water supply.

4.1.3 Watershed Protection

Consideration of growth in the county must go hand in hand with consideration of watershed environmental quality in order to protect the quantity and quality of water resources. Inadequate or disturbed vegetation on watershed lands can lead to excessive erosion and siltation of streams and lakes. All developments on watershed lands should be carefully evaluated for their potential effects on surface water.

Natural waterways provide water for domestic, agricultural, and industrial uses. They are also invaluable recreational resources and vital habitat for native plants and wildlife. Development can threaten waterways directly through watershed vegetation removal. Erosion, which can occur after grading and excavation associated with development, can result in loss of



valuable soils and affect water quality by increasing sediments in waterways. Reduced water quality, in turn, can adversely affect aquatic life and riparian habitats and limit society's use of the water. The rate of soil loss on newly excavated or graded ground can be 20 to 200 times the rate on natural ground surfaces. Riparian forests, those narrow strips of often dense vegetation that grow along many watercourses, are habitat for many plant and animal species and help protect water quality by providing a buffer between waterways and land uses that could impair water quality (QUAD Consultants, February 1992:105-106).

Along with riparian forests, other types of wetlands, such as marshes and swamps, are equally crucial to maintaining surface water quality. Wetlands absorb and filter pollutants that would otherwise migrate into rivers, lakes, and reservoirs. Wetlands "sponge" up runoff, thus reducing downstream flooding and enabling sediments to settle before entering rivers. They also stabilize river banks, thereby reducing additional water quality effects from siltation and turbidity.

An "edge effect" occurs where different habitats come into contact, such as where wetlands contact grasslands or oak woodlands. Edge zones are particularly productive and vital for wildlife. Building and development setbacks, open space corridors, or green belts should be provided to protect riparian corridors, artificial waterways, and wetlands. These setbacks should minimally include all riparian forests and other wetland habitats *plus* a minimum 50-foot wide corridor adjacent to them to preserve edge habitat and buffer riparian and wetland habitats from direct impacts. This, in turn, will assure that the wetlands remain in place to fulfill their functions in relation to the protection of water quality (QUAD Consultants, February 1992:107).

4.1.4 Water Supply

Manipulation of natural water features has allowed people to settle in areas where there is no readily available surface water. Along with rivers and creeks, artificial water features, such as channels, sloughs, reservoirs, wells, aqueducts, and distribution systems provide water for industrial, domestic, agricultural, recreational, and other uses. Such manipulation also has allowed



for flood control and reclamation² of wetlands for agricultural and other uses.

In the decades following the Gold Rush, water was diverted from virtually every stream and channeled to water-hungry mining operations. For the purpose of hydraulic mining, in which whole mountains were reduced by high-pressure blasts of water from water cannon, known as monitors, to reach gold-bearing strata, it was often necessary to combine flows from several sources to produce the necessary hydraulic pressure. Thus, thousands of miles of artificial waterways were created in the Sierra Nevada in the form of ditches, flumes, and canals. This network of artificial waterways and storage reservoirs was later largely incorporated into modern hydropower systems, such as that of PG&E, as well as modern irrigation and domestic water supply systems. Farmers began diverting Yuba River water for irrigation purposes in the late 1800s.

The overall effect of these artificial water works is to store water during the annual rainy season to be slowly released and distributed during the annual drought, thus ensuring that seasonal water surpluses are converted to a reliable year-round supply. Careful manipulation of water supply is very important. Even during a prolonged drought, such as the one currently in its sixth year, there appears to the general public to be adequate domestic and irrigation water. However, appearance can be somewhat deceptive. When surface water supply is low, water suppliers draw more groundwater. Groundwater recharge is much reduced in years of below average rainfall, and the groundwater table becomes depleted. Groundwater supply is thus being depleted by the dual factors of reduced recharge rates and greater draw-down from increased dependence on groundwater.

Assurance of surface water supply cannot be divorced from consideration of groundwater recharge. Some of our surface water has to be reserved for this purpose, as well as for protection of the aquatic environment. The most important agency that monitors and regulates water supply in Yuba County is Yuba County Water Agency. Amounts of surface water allotted to various water purveyors in Yuba County are described in Section 13.6.1.

² What has been considered in the past as "reclamation" of wetlands for beneficial uses is now widely considered to be an environmental impact. Wetlands are currently protected by the "no net loss" policies of responsible agencies that have jurisdiction over wetlands, such as the Environmental Protection Agency, U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service.



4.1.5 Flooding and Flood Protection

In its pristine condition, the Sacramento Valley was composed of perennial grasslands, riparian woodlands, and extensive marshes. The Sacramento River and other primary waterways often would flood in winter and early spring, recharging wetlands and depositing fertile sediments on the floodplain that is now valued for agriculture. River channels were somewhat migratory, shifting through time. In places along the rivers, natural levees would form that rose just above flood levels. Native peoples built their villages atop these slightly elevated terraces along the riverbanks. Over hundreds and thousands of years, these "islands" among the floodplains grew in height and breadth as the debris of daily life, such as shell, bone, ash and other material gradually accumulated.

In 1852, hydraulic mining began at American Hill, just north of Nevada City in Nevada County, and at Yankee Jim's in Placer County (Clark 1970:5). Hydraulic mining operations soon were common throughout the Mother Lode country, washing immense quantities of sediments, the remains of whole mountains, into Sierran streams. Commenting on the effects of hydraulic mining, nineteenth century historians Thompson and West (1882:402) decried the fact that the Middle Fork of the American River was "...made treeless, mud-laden, turgid, filthy, and fishless." The effects in the Sacramento Valley were even more drastic. As river channels filled with sediments, their waters flooded over their banks more readily. During the rainy winter of 1861-62, the Sacramento Valley was transformed into what contemporary observers called a "great inland sea."

The effects of hydraulic mining were and remain particularly significant for the valley portions of Yuba County, especially in the Marysville vicinity, where the Feather and Yuba rivers converge. Both of these river basins received immense sediment loads from hydraulic mining at their upper reaches. At the mouth of the Yuba River at the south edge of Marysville, 70 feet or more of sediment filled the river channel. Upstream of Marysville, whole communities were buried under more than 40 feet of silt and gravel (Hoover et al. 1990:539). In order to prevent the flooding of Marysville and surrounding valley communities and, in fact, to prevent them from being buried under the muck being washed down from the mountains, levees along the Feather and Yuba rivers and their tributaries, including Honcut Creek and Jack and Simmerly sloughs, were built ever higher to confine the sediments and flood



waters to a relatively narrow channel. As a result, Marysville and its modern suburbs of Olivehurst and Linda are now many feet below the flood water level of the rivers.

Flood hazard areas are mapped by the Federal Emergency Management Agency (FEMA) on Flood Insurance Rate Maps (FIRM). These maps are designed for flood insurance purposes only and do not necessarily show all areas subject to flooding. The maps designate lands likely to be inundated during a 100-year storm event and elevations of the base flood. They also depict areas between the limits affected by 100-year and 500-year events³ and areas of minimal flooding. These maps are often used to establish building pad elevations to protect new development from flooding effects. Figure 4-2 shows flood-prone areas of Yuba County according to FEMA.

The area north of Marysville as far as the Butte County line lies in Reclamation District 10. This District is responsible for flood control and levee maintenance within its jurisdiction. The main levees on the Feather and Yuba rivers are intended to protect this area from the rivers *per se*. However, inside this ring of levees, local flooding is common.

There are three Reclamation Districts in Yuba County in addition to District 10: Districts 784, 817, and 2103. Their locations are shown on Figure 4-3. District 784 serves a large area along the Feather River to the south of Marysville at the western edge of the county. Districts 817 and 2103 serve areas in the extreme southern end of the county along the Bear River.

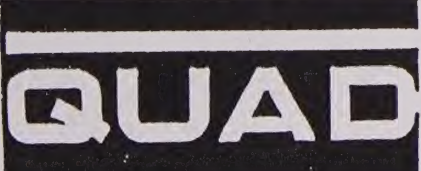
A levee system surrounds the entire City of Marysville and is maintained by the Marysville Levee Commission. The levee system is integrated with flood control water storage projects. Among these are Lake Oroville and New Bullards Bar Reservoir, which have storage capacities of 3.5 million and 960,000 acre-feet, respectively. This flood control system has been incorporated into the Sacramento River Flood Control Project of the Corps

³ In hydrological analysis, a return interval or return period is defined as the average frequency of occurrence of an event with a specified duration and intensity. As applied to storm events, a "100-year storm" (i.e., a storm with a 100-year return interval) is generally understood to represent the peak storm event, in terms of amount of precipitation, that has a statistical probability of 1 in 100 of occurring during any given year within a 100-year period. In less technical terms, a 100-year storm can be thought of simply as the peak storm likely to occur during any 100-year period.

YUBA COUNTY



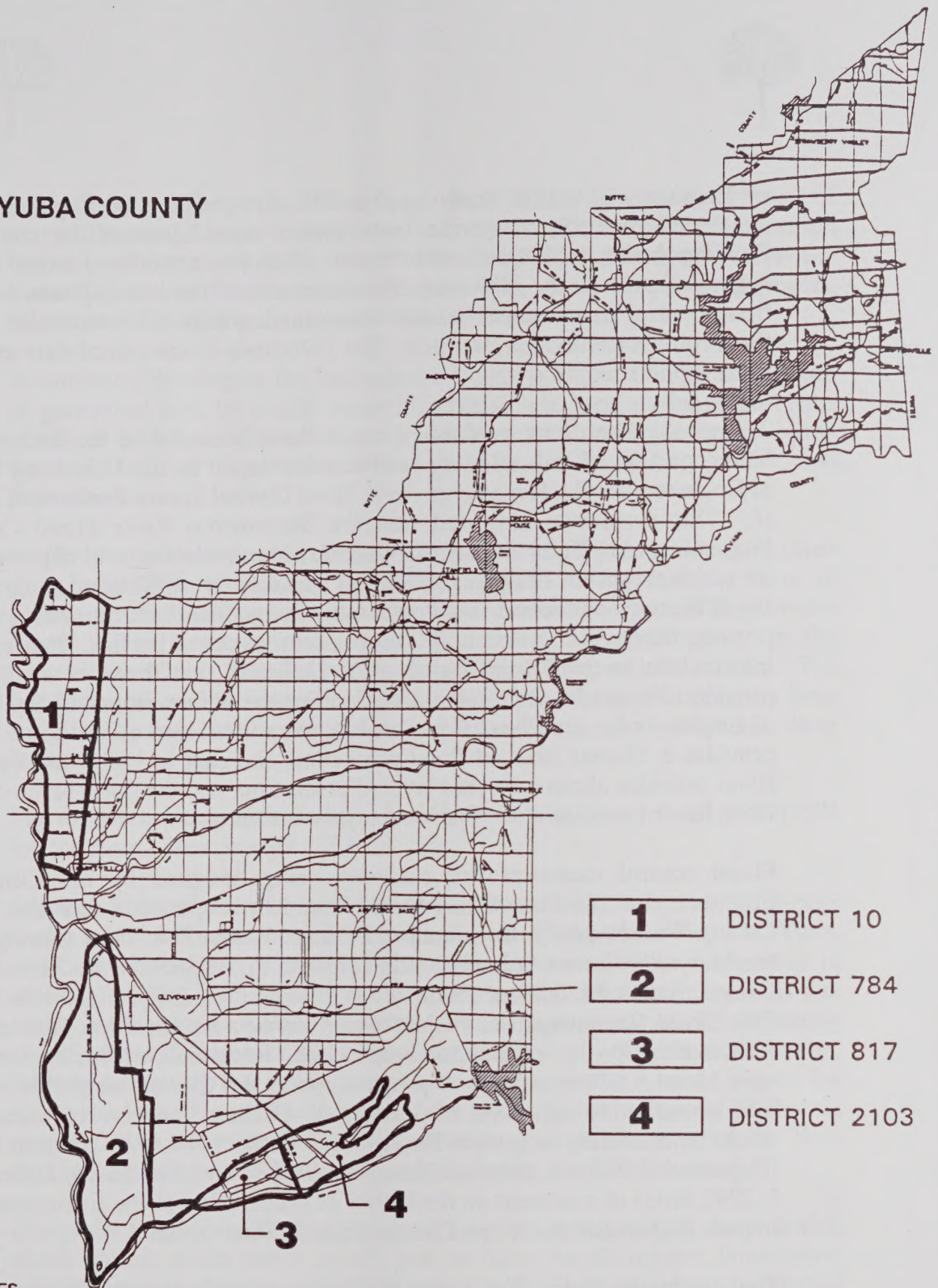
SOURCE: FEDERAL EMERGENCY MANAGEMENT AGENCY
FEDERAL INSURANCE ADMINISTRATION
FLOOD INSURANCE RATE MAP FOR YUBA COUNTY



AREAS SUBJECT TO FLOODING

FIGURE
4-2

YUBA COUNTY



SOURCE: Local Agency Formation Commission

QUAD

RECLAMATION DISTRICTS

**FIGURE
4-3**



of Engineers. A 1976 study by the U.S. Army Corps of Engineers had concluded that the Marysville levee system would protect the city from flooding during a 500-year storm event. This was considered to be a high degree of protection. However, this assumed that the levee system and the flood control dams would be well-maintained, which is an expensive effort that requires continuous attention. The 1976 study is now out-of-date and has been superseded.

The most recent, best available data on flood potential in the Sacramento Valley portion of Yuba County has been developed by the U.S. Army Corps of Engineers for the *Sacramento River Flood Control System Evaluation, Phase II*. This evaluation indicated that the Sacramento River Flood Control Project levees in Yuba County currently do not provide the level of protection for which they were designed, which was based on the 1907 flood, contrary to the 1976 study mentioned above, which concluded that the levee system would protect Marysville from a 500-year storm event. In fact, the newest information in the Phase II evaluation indicated that these levees do not provide 100-year flood protection. According to data developed by the Corps of Engineers for the Phase II evaluation, the south levee of the Yuba River provides a 25-year level of flood protection, the east levee on the Feather River provides about a 70-year level of protection, and the north levee on the Bear River provides a 65-year level of protection.

Flood control measures are currently being designed by the Corps of Engineers and the State Reclamation Board in cooperation with the Yuba County Water Agency, Reclamation Districts 10 and 784, Yuba County, and the Marysville Levee Commission in response to the *Sacramento River Flood Control System Evaluation, Phase II*. When completed, the Marysville-Yuba City Levee Reconstruction Project would provide Reclamation District 784 with about a 70-year level of flood protection. Reclamation District 10 would have about a 170-year level of protection and the City of Marysville would have about a 150-year level of protection. Further flood control measures would be necessary to protect Reclamation District 784 from 100-year flood (Raymond E. Barsch, General Manager, the Reclamation Board, December 9, 1992, letter of comment on the Notice of preparation of the Environmental Impact Report for the Yuba County General Plan Update).

The Marysville-Yuba City Levee Reconstruction Project in District 10 is scheduled to begin shortly after September 1994. Improvements to the east



side levees on the Yuba River and the Feather River downstream of Marysville would begin one to two years later (Ken Finch, Reclamation Board, pers. comm., January 1994; Phillip Lee, Project Manager, Marysville-Yuba City Levee Reconstruction Project, U.S. Army Corps of Engineers, Sacramento District, pers. comm., January 1994).

In summary, flooding in the Sacramento Valley portion of Yuba County can be generated both by locally occurring rainfall and local drainage problems as well as from levee failure cause by instability and insufficient height of the Sacramento River Flood Control Project levees on the Yuba, Feather, and Bear rivers.

As noted elsewhere in this document, modern development, which is often characterized by creation of impervious ground surfaces in the form of pavements and buildings, results in significant amounts of excess storm water runoff. This factor represents a constraint on new development in the Sacramento Valley, particularly in Marysville, Linda, and Olivehurst. The flood control and drainage facilities that protect these communities have limitations, and development must be planned in recognition of these limitations.

The following paragraphs derive primarily from Wade Associates' (1989) EIR for the *East Linda Specific Plan*.

South of Marysville, in the vicinities of Olivehurst and Linda, storm drainage is also a major constraint to new development. Flows of the Feather, Yuba, and Bear rivers along with runoff from Olivehurst and Linda often result in shallow flooding of these communities. Part of the drainage problem is due to the inadequate capacity of downstream drainage channels. During heavy runoff, channels south of Olivehurst frequently back up with excess water, thereby restricting the downstream flow of water out of Linda. Figure 4-4 shows the State Flood Water Rights Area over which the State of California owns rights to store excess floodwaters during periods of heavy runoff. Note that large portions of Olivehurst are included in the flood easement.

Under the *South Yuba Drainage Master Plan*, the Linda and Olivehurst drains, which collect storm water runoff, join to form the Olivehurst Interceptor, which connects these waters to Reeds Creek Channel. Due to limited downstream drainage capacity, new development in the areas served by the



Olivehurst and Linda drains must be carefully designed to avoid exceeding the design capacity of this drainage system. Thus, the capacity of this system is a major constraint on development in the Olivehurst-Linda area.

Revisions to the *South Yuba Drainage Master Plan* have recently been prepared in order to seek ways to protect future development south and east of Linda and Olivehurst from flooding (MHM, June 1991). The revisions are currently in draft form and under review by the County.

The following discussion of flood control and drainage systems in the Wheatland area derives primarily from the *1995 Wheatland Specific Plan* (City of Wheatland 1990).

Further east, near the edge of the Sacramento Valley in Wheatland, which is bordered by the Bear River, drainage and flooding are also a constraint to future development. Much of the recently proposed development of the City in the *1995 Specific Plan* area, which comprises much of the northern half of the City, has not proceeded due to concerns about storm water drainage. The Plan area has been divided into three drainage areas, and plans exist for drainage systems to serve each of these areas. These drainage facilities are to be provided largely by private developers.

The concerns for new development stem from the fact that FEMA and the Corps of Engineers disagree about the current level of protection provided by the north Bear River levee to the City of Wheatland. The Corps of Engineers found that the levee had a section that does not provide adequate freeboard to protect against a 100-year storm. FEMA disagreed with the Corps' methodology that led to the conclusion that the levee is inadequate. Subsequent studies prepared on behalf of FEMA to characterize the current status of the levee and determine what improvements would be needed to provide protection against a 100-year storm were commented on by the Corps, which disagreed with assumptions that the studies' conclusions were based on.

According to Consulting City Engineer, Dennis Ryan (pers. comm., February 1994), all parties essentially agree that 1) current FEMA mapping for this area is not accurate, and 2) there is substantial disagreement regarding the necessary actions that must be taken to correct any levee deficiencies. Developers are being adversely affected by the disagreement between the two agencies regarding the levee's current status and necessary corrective actions



SOURCE: Yuba County Planning and Building Services Department, 1992.



to achieve Corps of Engineers certification that it will provide protection in the face of a 100-year storm event. As of late 1992, these developers had obtained a permit to undertake repairs to the levee and were negotiating with landowners and contractors to initiate the work. However, due mainly to the impasse between the agencies, no action had been taken as of February 1994.

It is apparent that continuous (and expensive) maintenance of the drainage and flood control systems is necessary to protect existing Yuba County communities that occupy the Sacramento Valley. The capacities of these systems are a major constraint to new development in the Valley. New development requires careful analysis of the on-site and downstream effects of the creation of excess storm water runoff. Elaborate new systems must be constructed to accommodate runoff from these new developments at great expense and effort. These systems often include runoff collection systems, conveyances, including ditches, canals, and pipelines, detention basins and holding ponds, and pumping stations.

4.2 GROUNDWATER HYDROLOGY

4.2.1 Groundwater Use

The term "unconfined aquifer" refers to a body of groundwater which is not overlain by impervious materials and flows under control of the water table slope. Changes in groundwater storage are indicated by changes in groundwater levels in unconfined aquifers. "Confined aquifer" refers to a body of groundwater overlain by impervious material which severs the hydraulic connection with the overlying water and flows under pressure caused by the difference in head between intake and discharge areas of the confined water body.

4.2.1.1 Groundwater Occurrence

Within the valley area of Yuba County, the pre-Eocene Formations have relatively low permeability and are moderate producers. The significant water producing aquifers in this area are the post-Eocene non-marine sediments.

Fracture systems within the metamorphosed bedrock are considered the dominant controlling factor on the occurrence of groundwater in



the foothill and mountain areas. In general, the greater the extent of fracturing in the bedrock, the greater the permeability and ability to transmit water. Wells within the foothill and mountain areas yield low to moderate flows adequate for domestic purposes, but marginal for farming, ranching or industrial purposes. At depths greater than 300 to 400 feet, lithostatic pressure from overlying rock causes fractures to close within moderately strong, weathered fractured bedrock. The western foothill area is underlain by very widely fractured, slightly weathered and extremely strong Jurassic metavolcanic rocks and serpentinite. Well yields in the western foothill area are generally low and some wells in this area reportedly extend to depths in excess of 900 feet.

4.2.1.2 Groundwater Quantity

The County currently does not have a minimum standard well for production for domestic use. Low producing groundwater areas commonly employ storage tanks which collect a large volume of water over time.

The term "specific yield," when used in connection with groundwater, refers to the ratio of the volume of water that a saturated soil will yield by gravity to its own volume, and is commonly expressed as a percentage. Groundwater storage capacity is estimated as the product of the specific yield and the volume of material in the depth intervals considered (DWR, 1952).

Within the valley area, groundwater storage capacity was estimated from a study of some 700 well logs for the depth intervals from 20 to 50 feet, 50 to 100 feet, 100 to 200 feet and for the entire interval from 20 to 200 feet below ground surface (DWR, 1952)(Table 4-1).



TABLE 4-1
GROUNDWATER STORAGE CAPACITY - VALLEY AREA

Depth interval, in feet from ground surface	Weighted average specific yield, in percent	Ground water storage capacity, in acre-feet
20 to 50	7.4	840,000
50 to 100	6.9	1,290,000
100 to 200	6.0	1,760,000
20 to 200	6.6	3,800,000

Source: California Department of Water Resources, 1952.

Agriculture is the largest water user in the area north of the Yuba River. Surface water has always served a large portion of the water needs in this area. Due to the availability of surface water, groundwater levels have stayed fairly constant since the monitoring program began in the late 1940's. Spring groundwater levels range from 50 to 70 feet above mean sea level. Minor fluctuations in spring levels can be seen throughout the period of record due to climatic events such as the 1976/1977 drought, when levels dropped 30 feet in two years. However, by 1979, levels had recovered to historical elevations.

Historical data for western Yuba County indicate a pumping depression had developed during the 1950's south of the Yuba River between Olivehurst and Beale Air Force Base. In 1960, spring groundwater levels at the center of the pumping depression were about 10 feet above mean sea level. Although the width of the depression has stayed fairly constant, levels at the center of the depression fell about 3 feet per year until 1965. The drought of 1976/1977 caused the water levels to drop about 20 feet, to about 35 feet below mean sea level. The lowest groundwater levels were recorded at 45 feet below mean sea level in 1980, 1981, and 1982. In 1984, surface water was made available to a large portion of the land south of the Yuba River, an area which was previously dependent on groundwater. Since that



time, groundwater levels have risen over six feet per year, to a 1990 spring elevation of about five feet above mean sea level at the center of the pumping depression.

The United States Geological Survey investigation well yield data are summarized in Table 4-2. The table shows the number of wells tested, their average discharge, specific capacity depth and yield factor. The yield factor reflects the production of water per foot of depth of well and is determined by multiplying the specific capacity by 100 and dividing by the depth of the well, in feet.

As indicated in Table 4-2, the better wells of the Yuba County area are located on the West Side and in the Northeast. While wells of adequate capacity may generally be obtained throughout the remainder of the area, it is usually necessary to drill to greater depths for equivalent yields. Within the southeastern portion of the East Central Zone, there is an area of approximately 3,400 acres of irrigable land upon which efforts to obtain wells of sufficient capacity to support irrigation demands have been unsuccessful (DWR, 1952).

The hydrogeology of the foothill and mountain areas is very complicated due to steeply dipping fracture systems in the bedrock. In fluvial formed valleys, such as the valley area, groundwater surfaces "tables" and aquifer characteristics are very predictable due to the presence of thick saturated granular aquifers. In mountainous areas, groundwater is difficult to predict and quantify because bedrock fractures, rather than a saturated stratum, serve as the primary transportation mechanism. The occurrence and quantity of groundwater available for domestic use is dependent upon the nature of the bedrock, fracture distribution and interconnection of the fractures. The hydraulic conductivity of fractured bedrock depends upon the nature and distribution of fractures and can vary by several orders of magnitude. Hydraulic conductivity generally varies from 10^{-4} cm/sec in very fractured bedrock to 10^{-7} cm/sec in relatively tight fractured rock (Freeze & Cherry, 1979).



TABLE 4-2
WELL DATA - VALLEY AREA

Zone	Number of wells tested	Average discharge, in gallons per minute	Average specific capacity, in gallons per minute per foot of drawdown	Average depth of wells, in feet	Average yield factor
West Side					
Peach Bowl	249	728	47	182	25.7
Outside Peach Bowl	48	878	54	320	16.8
Northeast	28	838	60	201	29.8
East Central	109	846	48	292	16.7
South Side	104	960	47	324	14.7

Source: California Department of Water Resources, 1952.

A general assessment of the hydrogeology serves to characterize areas as either groundwater recharge or discharge areas. Groundwater discharge occurs in areas lower in elevation than the water surface in flowing streams. Groundwater recharge occurs as infiltration due to precipitation and surface water in areas higher in elevation from streams.

The upland areas of Yuba County generally serve as groundwater recharge areas, as do valley areas, along the Yuba, Feather and Bear rivers. In the foothill and mountain areas, ephemeral streams recharge the groundwater. Groundwater recharge in the vicinity occurs primarily from the direct infiltration of precipitation and losses from ephemeral streams. The downward migration of rain water is impeded by and filtered through clay-filled fractures in the weathered bedrock zone. Groundwater generally follows surface topography and is expected to flow in approximately the same direction as the slope of the land. Significant groundwater recharge areas in Yuba County have been identified by the U.S. Soil Conservation Service and are shown on Figure 4-5.



4.2.1.3 Groundwater Quality

Historically, agricultural pesticide applicators were required to apply pesticide rinse water onto the treated fields or to contain it at their facility. Some, who contained rinse water at their facility, utilized surface impoundments; however, most discharged the rinse water to paved areas or soil adjacent to their wash area. A few even utilized leach fields or discharged into surface drainage courses. Non-point source cause and cleanup is not straightforward. In many cases, the practice that caused the contamination may have been entirely in compliance with existing regulations. The worst example of widespread pesticide contamination of groundwater in California occurred through the use of the nematocide dibromochloropropane (DBCP). It was first discovered in groundwater in 1979 by the Central Valley Regional Board staff as a follow-up to an Occidental Chemical Manufacturing site investigation. Nearly 10 years after it was banned, DBCP contaminated wells are still being discovered. Another example of widespread pesticide contamination was the discovery in groundwater of propylene dichloride (1,2-D), a nonessential component of two widely used soil fumigants, DD and Telone II (trade names). Other soil fumigants including ethylene dibromide (EDB) and Aldicarb are being suspended from use in several Central Valley counties because of groundwater contamination by these fumigants. Recent testing has concentrated on small water systems. Results show that the incidence of contamination of small water systems is more than twice that of large systems. The threat to these small systems is generally greater because they have shallower wells, and are nearer to intensively farmed areas (CVRWQCB, 1989).

In addition to the problem of toxic pesticides possible in the valley area, the State Water Resources Control Board concludes that the threat posed to drinking water contaminated with nitrates is equal to or exceeds that which has been caused by toxics. The three most significant sources of nitrate contamination are fertilizer use, large concentrations of confined animals and individual waste disposal systems. Since most septic tank problems, however, occur at a density of greater than one unit per acre, these problems are generally categorized as urban. It is generally agreed that there is no economically affordable nitrate treatment process for an individual

YUBA COUNTY

Map showing the generalized location of significant groundwater recharge areas in Yuba County, California. The map includes a grid, major roads, and various geographical features. Shaded areas indicate recharge zones. Labels include YUBA COUNTY, BUTTE COUNTY, CORNELL COUNTY, and various towns like CHALLENGE, BROOKVILLE, and HARTSVILLE.

GENERALIZED LOCATION OF SIGNIFICANT GROUNDWATER RECHARGE AREAS

0 1 2 3
SCALE IN MILES

QUAD

FIGURE
4-5



family well. Because individual well head treatment is so expensive, the Regional Board feels that the only cost-effective alternative to reduce nitrate contamination in rural areas is to reduce the source. Both commercial fertilizers and animal wastes should be applied at times and rates which are consistent with crop demands for nutrients.

High groundwater salinity may be present in scattered wells which may preclude use of the groundwater for irrigation, domestic and many industrial uses. In southwest Yuba County there was documented deep-seated brine (connate water) admixture with native fresh groundwater in the 1930's and 1940's, and admixture potentially continues today. In many instances, connate water which is confined under considerable pressure may rise towards the surface through defective, abandoned, or improperly constructed wells contaminating near-surface fresh water aquifers.

4.2.1.4 Individual Septic Systems

The current growth in Yuba County is placing an increased dependance upon individual wastewater disposal systems as permanent solutions to the problem of waste disposal. In the past, on-site wastewater systems were typically viewed as a temporary solution with an estimated life of ten to twenty years (Laak, 1986). The current trend toward reliance upon on-site disposal systems is due to the increased costs and technical challenges associated with the development of public sewerage systems. With proper planning and implementation, it is possible to consider on-site wastewater disposal systems as a permanent solution.

Dry wells were common in the past within the valley area and some were installed in areas of high groundwater northwest of Marysville. The County now accepts standard, engineered and advanced-design leach-trench wastewater systems. Standard systems are allowed in areas which have a percolation rate from 5 to 60 minutes per inch. Engineered systems are approved on sites with percolation rates from 61 to 120 minutes per inch. Advanced system design is required for all other cases.



Yuba County currently has no minimum parcel size ordinance for septic tank use and approves development on a lot-by-lot evaluation. Conventional limitations on lot size with a 25-ft setback requirement for a 1100-ft² house and 10-ft clearance from property lines, result in a 0.25 acre minimum effective lot with community water. Additional area is required for the repair of the on-site system and to allow for areas that cannot be used, such as cut-slopes, areas without soil cover and wet areas.

Based solely upon the size requirements, an individual home served by a community water system and an on-site disposal system could exist on lots from 0.5 to 1 acre in size with suitable soil conditions.

Lots served by individual water wells need to be larger than those served by community water systems to accommodate an adequate separation between the on-site disposal system and well. Based solely upon the size requirements, an individual home served by an individual well and on-site disposal system could exist on lots from 3 to 5 acres in size with suitable soil conditions.

However, the minimum lot size information presented above does not account for other factors including the cumulative effect on groundwater quality from large numbers of on-site disposal systems within a concentrated drainage basin.

4.2.1.5 Septic System Evaluation, Brownsville, Challenge and Smartville

This section evaluates the potential infiltration of wastewater through shallow soil and weathered rock and possible cumulative impacts on the shallow groundwater within three communities as requested by the County: Brownsville, Challenge and Smartville. It must be stated at the outset, that 84.9 percent of the housing within the county is 10 years or older and that nearly 30 percent was built between 1960 and 1969. A cursory inspection of the communities of Brownsville, Challenge and Smartville suggests that the majority of houses were built more than 20 years ago. Based on the average age of the on-site systems in the communities, failures are to be expected without mitigation techniques being implemented.



The North Coast Regional Water Quality Control Board has pioneered a method of evaluating the cumulative impact of wastewater disposal systems over a large area. The methodology used herein follows the guidelines found in Phase II of the 208 Planning Program for the North Coast Regional Water Quality Control Board. The methodology evaluates the possible long-term impacts associated with development proposals, land use plans and specific on-site sewage disposal designs.

The assessment within the study areas includes hydraulic mounding, salt accumulation, nitrate accumulation, nutrient additions, and bacteriological impacts resulting from on-site disposal upon the groundwater.

Methodology

Current land use zoning in Brownsville includes 5-acre minimum parcels in the vicinity and 1-acre minimum parcels in the core area; the following analysis assumes a conservative density of 1-acre minimum parcels throughout a 4-square mile drainage basin area.

Land use zoning in Challenge includes 10-acre minimum parcels in the vicinity and 0.5-acre minimum parcels in a core area; this report analysis assumes a conservative density of 1-acre minimum parcels throughout a 2-square mile drainage basin area.

Within Smartville, land use zoning includes 5-acre minimum parcels in the vicinity with some pre-existing, non-conforming 1-acre parcels. This report analysis assumes a density of 1-acre minimum parcels throughout a 2-square mile drainage basin area.

Reference Tables 4-3 and 4-4 while reviewing the following discussions.



TABLE 4-3 - ESTIMATED LOADING CONDITIONS
YUBA COUNTY

Area	Average annual rainfall (inches)	Deep Percolation			Housing Density		Loading				
		Available Water Holding (in./in.)	Runoff Percent	Eff. Depth	Basin Area (acres)	Dwelling Units per acre	Dwelling Unit loading (450 gals/day)		Background groundwater conc. (mg/L)		Waste Load (in/yr)
							Existing parcels	Zoning limit	Salt	Nitrate	
Brownsville	50	0.16	55	48"	2560	1	-	1,152,000	150	0.025	6.03
Challenge	65	0.18	55	72"	1280	1	-	576,000	100	0.025	6.03
Smartville	35	0.16	55	36"	1280	1	-	576,000	150	0.025	6.03

Source: Youngdahl and Associates, September 1992.

TABLE 4-4 - PROJECTED GROUNDWATER IMPACTS

Area	Average annual rainfall (inches)	Hydrologic Effects			Salt Loading		Nitrate Loading				
		Est. deep percolation (in/yr.)	Waste Load (in/yr)	Relative increase	Background TDS (mg/L)	Combined percolate conc. (mg/L)	Total nitrogen loading (lbs/acre/yr)		Combined percolate conc. (mg/L)		Critical development density (ac/d.u.)
							Existing parcels	Zoning limit	Existing parcels	Zoning limit	
Brownsville	50	19	6.03	32%	150	222	-	21.6	-	7.7	0.70
Challenge	65	25	6.03	24%	100	168	-	17.5	-	6.3	0.50
Smartville	35	12	6.03	50%	150	250	-	30.0	-	10.7	1.10

Source: Youngdahl and Associates, September 1992.



Groundwater Hydraulics

Surcharging of the groundwater from the introduction of wastewater into the soil via on-site disposal systems is not addressed by standard siting and design criteria. The occurrence of long-term groundwater hydraulic problems in any particular instance depends upon the ability of the soil and groundwater system to accept and disperse the added wastewater loading (Ramlit, 1982). There exists an areawide potential to raise groundwater levels due to the hydraulic loading from large numbers of on-site systems. If groundwater levels rise to a level closer than five feet from the wastewater disposal systems, contamination is probable. Within the communities of Brownsville, Challenge and Smartville, a 32 percent, 24 percent and 50 percent relative increase in groundwater level may be anticipated due to loading from wastewater disposal systems at the critical development density.

Salt Accumulation

Within the communities of Brownsville, Challenge and Smartville, a combined percolate salt loading concentration of 222 mg/l, 168 mg/l, and 250 mg/l is anticipated due to loading from wastewater disposal systems at the critical development density.

Nitrate Accumulation

Within the communities of Brownsville, Challenge and Smartville, a combined percolate nitrate loading concentration of 7.7 mg/l, 6.3 mg/l, and 10.7 mg/l is anticipated due to loading from wastewater disposal systems at the critical development density.

The preceding methodology serves to relatively rank the communities and the cumulative impact upon the groundwater from development. The critical development found at the far right of Table 4-4, is not intended to suggest a minimum lot



size, rather it serves as a comparative aid from community to community. In general, the lower the critical development density, the better the soils treat waste. Accordingly, soil in the communities of Brownsville, Challenge and Smartville appear capable of supporting the high-density, core area on-site disposal on lots supplied by community water provided that the systems are designed, installed and maintained by licensed professionals. Based upon the findings of this study, conducted in conformance with the stated methodology, the critical factor regarding the density of on-site disposal systems in the foothill and mountain areas of Yuba County is reduced permeability in aging unmonitored systems.

Four factors working within the wastewater disposal system reduce the infiltration by reducing the permeability of the soil. These are plugging of the system by solids; dispersion of the clay particles by exchange of sodium ions from the sewage to the soil; physical breakdown of the soil by wetting and drying; and biological plugging. The factors work in unison and combine to rapidly reduce the permeability of the soil (failed system) when conditions are favorable.



SECTION FIVE
VEGETATION AND WILDLIFE



SECTION FIVE VEGETATION AND WILDLIFE

5.1 VEGETATION ASSOCIATIONS

Yuba County encompasses 640 square miles, ranging from the Sacramento Valley floor, to the lower western edge of the Sierra Nevada mountain range. This change of elevation allows for a wide diversity of habitats, including: Riparian Forest, California Prairie, Blue Oak-Digger Pine Forest, Sierran Yellow Pine Forest, Sierran Montane Forest, and Vernal Pools (Kücher, 1977, Figure 5-1). Figure 5-1 depicts the historic expanse of these habitats in Yuba County. Many of these natural habitats have been greatly modified, resulting from changes caused by human settlement. Holland (1986) describes the habitat as follows: Non-native grassland, Riparian Woodland, Great Valley Valley Oak Riparian Forest, Great Valley Cottonwood Riparian Forest, Great Valley Mixed Riparian Forest, Chaparral, Foothill Woodland, Digger Pine-Oak Woodland, Westside Ponderosa Pine Forest, Darlingtonia Seep, and Northern Hardpan Vernal Pool. A brief description of each habitat follows:

Non-native Grassland

The non-native grassland consists of a dense to sparse cover of annual grasses with flowering culms, often associated with numerous species of showy-flowered, native annual wildflowers, especially in years of favorable rainfall. With few exceptions, the plants are dead through the summer-fall dry season, persisting as seeds. This vegetation type occurs in the valleys and foothills of most of California, on fine-textured, usually clay soils, moist or even waterlogged during the winter rainy season and very dry during the summer and fall.

Riparian Woodland

The riparian woodland occurs as narrow strips of dense brush and trees along the water courses and around localized drainage basins. The dominant riparian trees are willow (*Salix* sp.), white alder (*Alnus rhombifolia*), western sycamore (*Platanus racemosa*), Fremont cottonwood (*Populus fremontii*), California laurel (*Umbellularia californica*), big-leaf maple (*Acer macrophyllum*), and western dogwood (*Cornus nuttallii*). Prominent as understory and vinelike plants are poison oak (*Toxicodendron diversilobum*),

YUBA COUNTY

The map displays the geographical distribution of various forest types and riparian areas within Yuba County. The legend identifies five categories:

- SIERRAN YELLOW PINE FOREST**: Represented by a grid pattern.
- SIERRAN MONTANE FOREST**: Represented by a pattern of small circles.
- BLUE OAK - DIGGER PINE FOREST**: Represented by a white/unfilled area.
- RIPARIAN FOREST**: Represented by a pattern of small trees.
- CALIFORNIA PRAIRIE**: Represented by a pattern of vertical lines.

The map shows the following distribution:

- SIERRAN YELLOW PINE FOREST** is located in the northern and eastern portions of the county.
- SIERRAN MONTANE FOREST** is found in the central and southern regions.
- BLUE OAK - DIGGER PINE FOREST** covers the western and central parts of the county.
- RIPARIAN FOREST** is concentrated along the major river systems, including the Yuba River and its tributaries.
- CALIFORNIA PRAIRIE** is located in the southern and central areas.

Other features include the county boundary, major roads, and the locations of several towns and cities, including Marysville, Yuba City, and Marysville.



Source: Kitchler, A. W. 1977 Map.
Barbour, M. G. and J. Major 1988

QUAD

VEGETATION ASSOCIATIONS

FIGURE 5-1



California wild grape (*Vitis californica*), wild blackberry (*Rubus* spp.) and elderberry (*Sambucus mexicana*). This association has been greatly disrupted by developments along various watercourses.

Great Valley Valley Oak Riparian Forest

This is a broadleafed, winter deciduous, closed canopy riparian forest. Stands of Great Valley Valley Oak Riparian Forest rarely reach canopy heights of 100 feet. The dominant canopy species is Valley oak (*Quercus lobata*). Understories include scattered Oregon ash (*Fraxinus latifolia*), Hinds walnut (*Juglans hindsii*) and California sycamore (*Platanus racemosa*) as well as young Valley oak. Climbing vines are often conspicuous and quickly invade open spaces in the canopy. These vines are often dense in the shady understory. Valley oak riparian forests are restricted to the highest parts of the flood plain or high above the active portions of river channels where they are less subject to physical disturbance from flooding, but still receive annual inputs of silty alluvium and subsurface irrigation (Holland 1986).

Great Valley Cottonwood Riparian Forest

The Great Valley cottonwood riparian forest is a dense, broadleafed, winter deciduous riparian forest dominated by Fremont cottonwood (*Populus fremontii*) and Goodding's willow (*Salix gooddingii variabilis*). Understories are dense, with abundant vegetative reproduction of canopy dominants. Scattered seedlings and saplings of shade-tolerant species such as California box elder also known as ashleaf maple (*Acer negundo californica*) or Oregon ash (*Fraxinus latifolia*), may be found, but frequent flooding prevents their reaching into the canopy. These sites are inundated yearly during spring, resulting in annual inputs of nutrients, soil, and new germination sites. This vegetation community was formerly extensive along the major low-gradient (depositional) streams throughout the Central Valley, but is now reduced to scattered, isolated remnants or young stands because of flood control, water diversion, agricultural development, and urban expansion.

Great Valley Mixed Riparian Forest

This is a winter deciduous riparian forest where canopies are relatively dense and closed. A diverse number of tree species is apparent in this forest and may include boxelder, Hinds walnut, California sycamore, Fremont cottonwood, Gooddings willow, and Pacific willow (*Salix lasiandra*). The



shrubs of this forest understory are typically shade tolerant and include species such as button bush (*Cephalanthus occidentalis*) and Oregon ash.

These riparian forests are typical of low-gradient streams of the Great Valley, usually below 1,000 feet elevation. All were formerly extensive in the Sacramento and northern San Joaquin valleys. Much of these forests have been cleared for urban development, flood control, and agriculture (Holland 1986).

Chaparral

The Chaparral or sclerophyllous woodland is an association of tall, evergreen, woody shrubs, which dominates many regions that are open and dry or in various stages of a post-burn succession. Although characterized as a brushland, chaparral formations are often interspersed with grasses and scattered trees and thus integrate with the other vegetation communities. The chaparral community is often composed of locally dominant species of shrubs along with an admixture of many other species. The dominant shrubs of typical communities are toyon (*Heteromeles arbutifolia*), several manzanitas (*Arctostaphylos*), California lilac (*Ceanothus* spp.), bitter cherry (*Prunus emarginata*), California scrub oak (*Quercus dumosa*), redbud (*Cercis occidentalis*), yerba santa (*Eriodictyon californicum*) and mountain mahogany (*Cercocarpus betuloides*). Chaparral formations occur most prominently on the slopes adjacent to canyons, ridge surfaces and valley sides and in areas which have been cleared, heavily logged or recently burned.

Foothill Woodland

The foothill woodland dominates ridge surfaces to elevations of 1,300 feet. The primary floral elements of this woodland are blue oak (*Quercus douglasii*), interior live oak (*Quercus wizlizenii*) and digger pine (*Pinus sabiniana*). Above 1,500 feet these species give way to canyon live oak (*Quercus chrysolepis*), tanbark oak (*Lithocarpus densiflora*) and black oak (*Quercus kelloggii*). Several species of shrubs provide an understory to this open woodland. Prominent in this community are manzanita (*Arctostaphylos* sp.), California lilac (*Ceanothus* sp.), yerba santa (*Eriodictyon californicum*), poison oak (*Toxicodendron diversilobum*) and several members of the rose family (e.g. the genera *Prunus*, *Rubus* and *Rosa*).



Digger Pine-Oak Woodland

This woodland is a mixture of digger pine (*Pinus sabiniana*) and blue oak (*Quercus douglasii*). Pure stands of either tree do occur, but mixed stands are more common. *Pinus sabiniana* usually towers over the oaks in undisturbed stands. Understories usually are dominated by introduced annuals. This vegetation type occurs on well-drained sites, in rocky or exposed sites along ridges or canyons with poor or shallow soils.

Westside Ponderosa Pine Forest

The Ponderosa pine forest occurs as a broad transitional zone between the foothill woodland and higher mixed coniferous associations. It is generally a closed forest dominated by Ponderosa pine (*Pinus ponderosa*). The closely related Jeffrey pine (*Pinus jeffreyi*) occurs locally on drier sites and serves as a specific indicator of ultrabasic and serpentine rock outcroppings. The Ponderosa pine zone has been the most heavily logged of all the communities in northern California and this practice has allowed the encroachment of other woody species into areas formerly covered by pines. The Ponderosa and Jeffrey pines are found locally intermixed with incense-cedar (*Calocedrus decurrens*), Douglas-fir (*Pseudotsuga menziesii*), white fir (*Abies concolor*), sugar pine (*Pinus lambertiana*), black oak and several additional hardwood species including big leaf maple (*Acer macrophyllum*), western dogwood and California laurel (*Umbellularia californica*).

Darlingtonia Seep (Bog)

Description of this area is similar to that of the *Sphagnum* Bog, being dominated by dense low-growing, herbaceous perennials and low shrubs. The growing season extends from spring through fall in low-elevation, coastal localities, but is limited to summer at higher elevations. Most flowering occurs early in the growing season. Typically found in cold, highly acid, permanently waterlogged soils that are low in nutrients, bogs are often associated with ultrabasic soils in the Klamath Ranges, less so in the Sierra Nevada. Peat tends to accumulate without decomposing completely. Characteristic plant species include sedges (*Carex spp.*), Lawson cypress (*Chamaecyparis lawsoniana*) (northwest California only), *Darlingtonia californica* (the only native California pitcher plant, a herbaceous perennial which grows to about 0.6 meters high), dew plant (*Drosera rotundifolia*), Labrador tea (*Ledum glandulosum ssp. columbianum*), lily (*Lilium spp.*), grass



of Parnassus (*Parnassia palustris*), butterwort (*Pinguicula vulgaris*), western azalea (*Rhododendron occidentale*), California cone-flower (*Rudbeckia californica* var. *glauca*), tule (*Scirpus criniger*), and *Sphagnum* spp.. Found in scattered localities in the Klamath Ranges from Trinity County to Siskiyou County, Del Norte County and southern Oregon. Also in the northern Sierra Nevada and in Nevada and Plumas Counties. Elevation ranges from 300-4,000 feet (90-1210 meters) in the Klamath Ranges, 4,000-6,000 feet (1210-1820 meters) in the Sierra Nevada (Holland 1986). The California Department of Fish and Game Natural Diversity Data Base (NDDDB) has labeled this community as one with high inventory priority (NDDDB 1990).

Northern Hardpan Vernal Pool

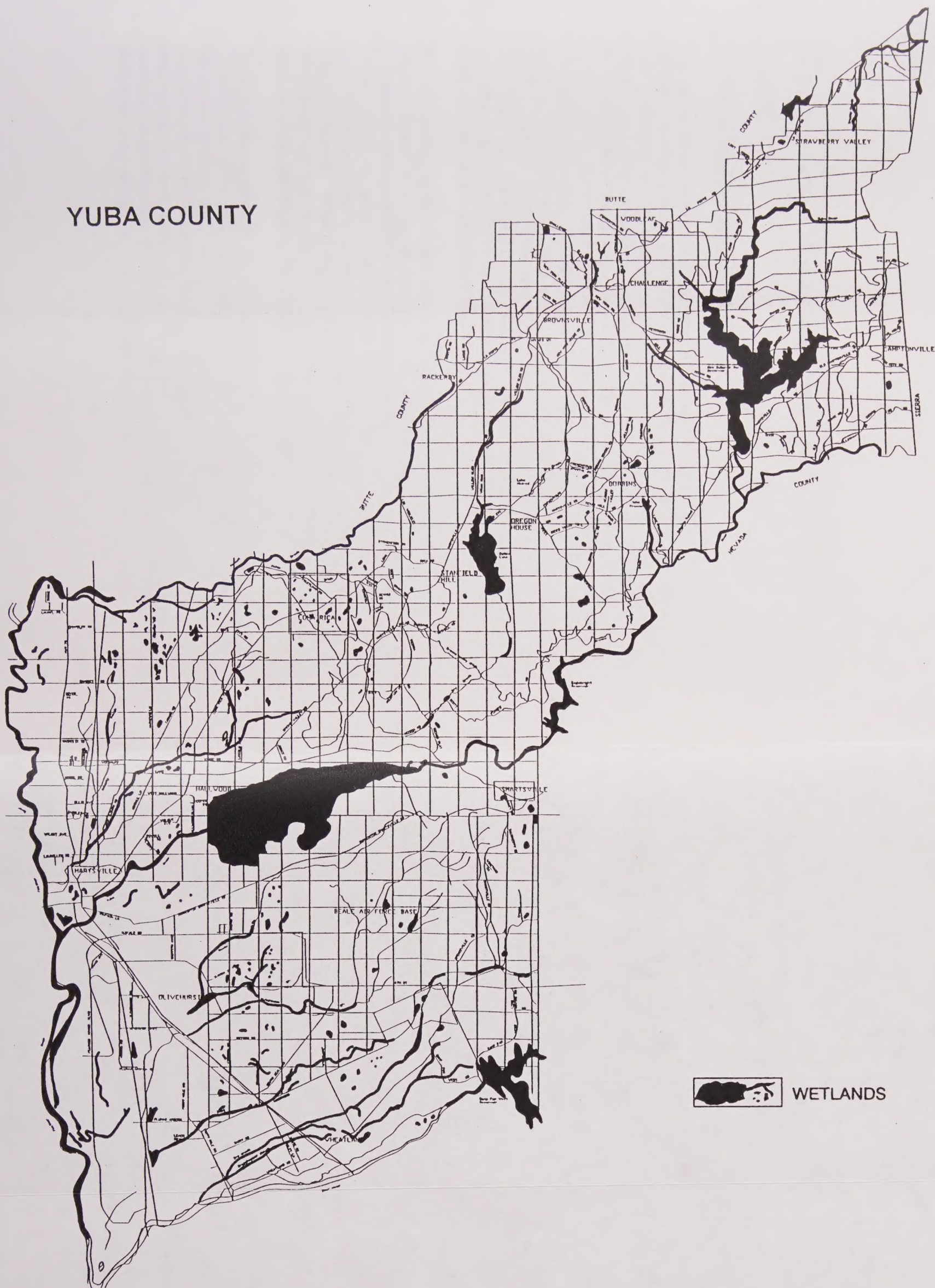
Within Yuba County there is a high density of vernal pool habitat (Holland 1978). These pools are ephemeral wetlands that occur when winter and spring rains fill the depressions in hogwallow or mima mound areas. Several sensitive plant species occur in association with the northern hardpan vernal pool community: Hoover's spurge (*Chamaesyce hooverii*, Federal Category 1; State-None), Green's tuctoria (*Tuctoria greenei*, Federal-Candidate Category 1; State-Rare), and Shippee meadowfoam (*Limnanthes floccosa* ssp. *californica*, Federal-Category 1; State-Endangered)¹.

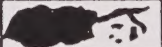
Several small crustaceans are also dependant upon this type of habitat. There are four fairy shrimp and a vernal pool tadpole shrimp that are currently proposed for federal listing. If listed, these species would benefit from all protections granted by the Endangered Species Act. These species are: the Conservancy fairy shrimp (*Branchinecta conservatio*), longhorn fairy shrimp (*Branchinecta longintenna*), vernal pool fairy shrimp (*Branchinecta lynchi*), California linderiella (*Linderiella occidentalis*), and the vernal pool tadpole shrimp (*Lepidurus packardi*). The vernal pool fairy shrimp, California linderiella, and the vernal pool tadpole shrimp all have the potential to be found in Yuba County. Figure 5-2 depicts general wetland areas located in Yuba County according to the 1976 United States Fish and Wildlife Service National Wetlands Inventory Maps.

These pools, as well as other wetlands are subject to the jurisdiction of the U.S. Army Corps of Engineers (COE) pursuant to Section 404 of the Clean

¹ For an explanation of Categorical and species status listings, refer to Section 5.9.

YUBA COUNTY



 WETLANDS



Source: National Wetlands Inventory
U.S. Department of Interior
U.S.F.W.S. 1976

QUAD

GENERALIZED WETLANDS

FIGURE
5-2



TABLE 5-1
SENSITIVE SPECIES THAT MAY OCCUR IN YUBA COUNTY

COMMON NAME	SCIENTIFIC NAME	STATUS			
		FED	STATE	CNPS	CDFG
ANIMALS					
BIRDS					
Swainson's Hawk	<i>Buteo swainsoni</i>	FC3C	CT		
Western Yellow-billed Cuckoo	<i>Coccyzus americanus occidentalis</i>	FC3B	CE		
Tricolored Blackbird	<i>Agelaius tricolor</i>	FC2			
Bank Swallow	<i>Riparia riparia</i>		CT		
Bald Eagle	<i>Haliaeetus leucocephalus</i>	FE	CE		
Northern Goshawk	<i>Accipiter gentilis</i>	FC2			CSC
Spotted Owl	<i>Strix occidentalis occidentalis</i>	FT			CSC
Golden Eagle	<i>Aquila chrysaetos</i>				CSC
Northern Harrier	<i>Circus cyaneus</i>				CSC
Black-shouldered Kite	<i>Elannus caeruleus</i>				CSC
Prairie Falcon	<i>Falco mexicanus</i>				CSC
Burrowing Owl	<i>Athene cunicularia</i>				CSC
Aleutian Canada Goose	<i>Branta canadensis leucopareia</i>	FE			
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	FE	CE		
Greater Sandhill Crane	<i>Grus canadensis tabida</i>	CT			
White-faced Ibis	<i>Plegadis chihi</i>				CSC



COMMON NAME	SCIENTIFIC NAME	STATUS			
		FED	STATE	CNPS	CDFG
Willow Flycatcher	<i>Empidonax traillii</i>	FC1	CE		
Least Bell's Vireo	<i>Vireo bellii pusillus</i>	FE	CE		
Ferruginous Hawk	<i>Buteo regalis</i>	FC2			
California Horned Lark	<i>Eremophila alpestris actia</i>	FC2			
Loggerhead Shrike	<i>Lanius ludovicianus</i>	FC2			
MAMMALS					
Pacific Western Big-eared Bat	<i>Plecotus townsendii townsendii</i>	FC2			CSC
Greater Western Mastiff Bat	<i>Eumops perotis californicus</i>	FC2			CSC
Spotted Bat	<i>Euderma maculatum</i>	FC2			
Sierra Nevada Snowshoe Hare	<i>Lepus americanus tahoensis</i>	FC2			CSC
American Badger	<i>Taxidea taxus</i>				CSC
Sierra Nevada Red Fox	<i>Vulpes vulpes necator</i>	FC2	CT		
Marysville Heerman's Kangaroo Rat	<i>Dipodomys heermanni eximus</i>	FC2			CSC
REPTILES					
Giant Garter Snake	<i>Thamnophis couchi gigas</i>	FC1, PE	CT		
Northwestern Pond Turtle	<i>Clemmys marmorata marmorata</i>	FC2			
AMPHIBIANS					
California Red-legged Frog	<i>Rana aurora draytonii</i>	FC1			
Foothill Yellow-legged Frog	<i>Rana boylei</i>	FC2			
Western Spadefoot Toad	<i>Scaphiopus hammondi hammondi</i>	FC2 (R)			



COMMON NAME	SCIENTIFIC NAME	STATUS			
		FED	STATE	CNPS	CDFG
California Tiger Salamander	<i>Ambystoma tigrinum californiense</i>	FC2			CSC
INVERTEBRATES					
Valley Elderberry Longhorn Beetle	<i>Desmocerus californicus dimorphus</i>	FT			
Spiny Rhyacophilan Caddisfly	<i>Rhyacophila spinata</i>	FC2			
Vernal Pool Fairy Shrimp	<i>Branchinecta lynchi</i>	PE	*		
California Linderiella	<i>Linderiella occidentalis</i>	PE	*		
Vernal Pool Tadpole Shrimp	<i>Lepidurus packardii</i>		*		
FISHES					
Winter Run Chinook Salmon	<i>Oncorhynchus tshawytscha</i>	FT	CE		
Spring Run Chinook Salmon	<i>Oncorhynchus tshawytscha</i>				CSC
Sacramento Splittail	<i>Pogonichthys macrolepidotus</i>				CSC
PLANTS					
Hartweg's Golden Sunburst	<i>Pseudobahia bahiifolia</i>	FC2	CE	1B	
Ahart's Paronychia	<i>Paronychia ahartii</i>	FC2		1B	
Ahart's Dwarf Rush	<i>Juncus leiospermus ahartii</i>	FC1		1B	
Veiny Monardella	<i>Monardella douglasii venosa</i>	FC2			
California Hibiscus	<i>Hibiscus californicus</i>	FC2			
Enterprise Clarkia	<i>Clarkia mosquinii xerophila</i>	FC3A		1A	
True's Manzanita	<i>Arctostaphylos truei</i>			3	



COMMON NAME	SCIENTIFIC NAME	STATUS			
		FED	STATE	CNPS	CDFG
Mildred's Clarkia	<i>Clarkia mildrediae</i>			4	
Boggs Lake Dodder	<i>Cuscuta howelliana</i>	FC3C		4	
Clustered Lady's Slipper	<i>Cypripedium fasciculatum</i>	FC3C		4	
California Pitcherplant	<i>Darlingtonia californica</i>	FC3C		4	
Butte County Fritillary	<i>Fritillaria eastwoodiae</i>	FC2		3	
Sticky Haplopappus	<i>Haplopappus lucidus</i>			4	
Quincy Lupine	<i>Lupinus dalesiae</i>	FC2		1B	
Tehama Navarretia	<i>Navarretia heterandra</i>			4	
Valley Oak	<i>Quercus lobata</i>			4	
Pine Hill Flannelbush	<i>Fremontodendron decumbens</i>	FC1	Rare		
SENSITIVE VEGETATION COMMUNITIES Great Valley Valley Oak Riparian Forest Great Valley Cottonwood Riparian Forest Great Valley Mixed Riparian Forest Northern Hardpan Vernal Pool Darlingtonia Seep					

FE Federally Endangered

FT Federally Threatened

FC# Federal Candidate Species

PE Proposed for Endangered Listing

1 Taxa for which sufficient biological information is available for listing as endangered.

2 Taxa for which information is now available, but for which supporting data is currently not on file.

3a Non-candidate previously considered, but now extinct.

3b Non-candidate previously considered, but now invalid taxonomically

3c Non-candidate currently too widespread or not threatened.

(R) Recommended for listing.



CE California Endangered
CT California Threatened
SA State Special Animal
CSC California Species of Concern

CNPS California Native Plant Society
1 A. Plants presumed extinct in California.
B. Plants rare and endangered in California and elsewhere
2 Plants endangered in California, but more common elsewhere.
3 More information needed.
4 Plants with a limited distribution.

Taxa listed with an asterisk (*) fall into one or more of the following categories:

- Taxa considered endangered or rare under Section 15380(d) of California Environmental Quality Act (CEQA) guidelines.
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range.
- Population(s) in California that may be peripheral to the major portion of a taxon's range, but which are threatened with extirpation within California.
- Taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands).

Source: 1991 NDDDB, USFWS, and Smith, J. P. and K. Berg. 1988. Inventory of Rare and Endangered Vascular Plants of California.

A brief description of some of these organisms follows:

Marysville Heermann's kangaroo rat

The Heermann's kangaroo rat is a dark colored kangaroo rat 269-340 mm long; tail 160-217 mm long. Heermann's kangaroo rat weighs from 56 to 74 grams. Heermann's kangaroo rats found north of San Francisco Bay and Coulterville, Mariposa County normally have four toes on the hind foot; specimens found south of San Francisco Bay and San Joaquin County normally have five toes on the hind foot, including a small claw on the side of the foot (Ingles 1965). This kangaroo rat gathers seeds from a variety of forbs and grasses including red brome (*Bromus rubens*), lupines (*Lupinus* spp.), red-stem filaree (*Erodium*



cicutarium), as well as green leaves and insects (Jameson 1988). Heermann's kangaroo rat is found on brushy and grassy slopes and flats of Valley Grassland and Foothill Woodland vegetation associations. The conversion of native grasslands in the Marysville vicinity to urban and agricultural uses, especially rice production, has eliminated much of the suitable habitat that could support populations of this kangaroo rat.

Bald eagle

The bald eagle has a body length of 79-94 cm and a wing span of 178-229 cm. The adult is brownish black with a white head and tail, and a large yellow hooked bill and talons. Immatures are entirely brownish black with gray wing linings. The gray does not reach the primary or secondary feathers, which is unlike the white patch at the base of the primaries in the immature golden eagle or the completely dark underwings of the adult golden eagle. The legs are not feathered to the feet as on the golden eagle. In California, the bald eagle constructs nests near large streams, lakes or reservoirs which furnish fish, the principal food item of the bald eagle. Nesting occurs mainly in the interior portion of northern California. In winter, bald eagles from larger populations breeding further north in Washington and Alaska move to lower latitudes to feed mainly at rivers, lakes and reservoirs where fish and waterfowl are plentiful.

Bald eagles have been sighted in the vicinity of Loma Rica along Browns Valley Ridge northeast of the City of Marysville foraging over rice fields (Dale Whitmore, CDFG, pers. comm., October 1992). Other sightings have occurred near Bullard's Bar Reservoir, which lies west of Camptonville (NDDDB). These occurrences are associated with the wintering migration of bald eagles in California. Locations that are known to have populations of bald eagles are Lake Oroville, Englebright Reservoir, Comanche Reservoir, Cache Creek, and Lake Berryessa (Detrich 1986). These lakes, streams and reservoirs represent areas from which wintering populations of bald eagles concentrate and forage. The occurrence of concentrations of waterfowl in the rice fields around the Sacramento Valley may attract foraging bald eagles. Waterfowl represent a large portion of the diet of wintering eagles. Many observers have noted that wintering bald



eagles in California and throughout the continental United States are often associated with concentrations of migratory waterfowl (Southern 1966, Shea 1973, Servheen 1975, Fielder 1982, Todd et. al. 1982, Griffin and Baskett 1985, Keister et. al. 1985 and Rhodehamel 1991).

Peregrine falcon

Peregrines are 41-51 cm long and have a wingspread of 91-112 cm. The male is about one-third smaller than the female and is similar in color. The wings are long, pointed, and bent back at the wrist typical of all falcons. Adults are slate-gray above, and the underparts are cream-colored with a dark narrow barring on the flanks and the belly. The head is dark with a heavy black mustache below each eye. Young birds are dark brown above, heavily striped below. Nests are located in scrapes on the ledges of high cliffs. Peregrines inhabit open wetlands near cliffs, and prey primarily on waterfowl. Peregrine falcons have been observed in the vicinity of the area of Browns Valley Ridge near Loma Rica northeast of the City of Marysville. (Mike Miller, USFWS, pers. comm., September 1992). Critical habitat for peregrine falcons consists of perching, nesting, roosting, and foraging areas. American peregrine falcons nest almost exclusively on cliffs, usually near water. Tree nesting is virtually unknown in this population, and nesting on made-made structures is rare (USFWS 1982). Foraging areas for peregrine falcons usually include wooded areas, marshes, open grasslands, coastal strand, and bodies of water. Agricultural rice lands need to be considered as possible foraging areas for peregrine falcons due to the large numbers of waterfowl attracted along the sloughs and rice fields thereby offering a suitable prey base.

Spotted owl

Spotted owls are large, dark brown, with white spotting on their head, back, and body. They have large dark eyes (as do the Barn and Barred owls), but all other large North American owls have yellow eyes. In northern California, they reside in multilayered old growth stands of mixed conifer, redwood, and Douglas fir habitats, but in Southern California they are typically associated with oak and oak conifer habitats. It is believed that roost selection is related to their thermoregulatory needs, due to their inability to tolerate high



temperatures. In California, their breeding range extends west of the Cascade Range through the North Coast Ranges, and the Sierra Nevada. Reproduction occurs from early March through June, with peak activity in April and May. Clutch size average is 2 eggs. The female incubates and broods young, while the male feeds both the female and young. Young birds may not become sexually mature until their third year, but once a mate is selected, the pair may use the same breeding site for 5-10 years. They prey upon a variety of small mammals including flying squirrels, woodrats, mice, voles, and occasionally rabbit. Also included are small birds, bats, and large arthropods. Studies in Oregon and in the Sierra Nevada, have concluded that a home range of about 120-240 ha (300-600 acres), with a mean of 180 ha (450 acres). Individual spacing is 1.6-3.2 km (1-2 miles), with an individual's territory ranging from 40-138 ha (100-340 acres). Generally these birds are not migratory, however some individuals will move to lower elevations during winter months (Zeiner et. al. 1990). Declared Federally Threatened in June 1990, this species has brought about much controversy between the timber industry and its habitat conservation efforts.

In *A Conservation Strategy for the Northern Spotted Owl* (1990), recent genetic studies determined that the northern spotted owl (*Strix occidentalis caurina*) and the California subspecies (*S. o. occidentalis*) are genetically the same; however some variation, a gene replacement, does occur further south in the owl's population range. The 1989 annual meeting of the Committee on Classification and Nomenclature of the American Ornithologist's Union ruled that the northern and California subspecies would be retained as described. This decision was based on exhibited clinal variation found across its range, the cline ends were judged to be sufficiently distinct to be recognized as a separate subspecies (Thomas et al. 1990).

Both the Plumas National Forest (PNF) and the Tahoe National Forest (TNF) have recorded observations of the California spotted owl. Total owl estimates for the PNF up to 1991 were 150 breeding pairs and 128 singles, of which one breeding pair, one single resident, and one other sighting (possibly a "floater") occur in areas found in Yuba County (Ann Chrisney, United States Forest Service (USFS), PNF-Wildlife Biologist, pers. comm., October 1992). Population estimates



occurring in the TNF total 130 breeding pairs and territorial singles, of which 3 known pairs are located in Yuba County (Diana Craig, USFS, TNF-Acting Wildlife Biologist, pers. comm., October 1992).

Aleutian Canada goose

The Aleutian Canada goose is a subspecies of the common and familiar Canada goose. This subspecies may often be distinguished from the common Canada goose by a broad white neck ring. The Aleutian Canada goose nests on the Aleutian Islands and winters in California. Approximately 90% of the total population uses the Central Valley for roosting in winter months. Flocks usually migrate in V-formation, stopping to feed in wetlands, grasslands, and cultivated fields.

Western yellow-billed cuckoo

The Western yellow-billed cuckoo is a long, slender bird distinguished by its long, curved bill with a yellow lower mandible. Wings are olive-brown above, white on the underside with bright rufous primary feathers. The outer tail feathers have large white spots. Preferred habitat of the yellow-billed cuckoo are lowland riparian and scrub vegetation associations. Destruction of riparian habitat as a result of urban and agricultural development, flood control, and stream stabilization projects have been major factors leading to the decline of the species (Anderson and England 1987). The lack of extensive stands of riparian vegetation is a severely limiting factor determining the occurrence of yellow-billed cuckoo.

Bank swallow

The bank swallow is a small brown-backed swallow with a white throat and a distinct dark breastband. The bank swallow nests in large colonies, excavating nest burrows in steep riverbank cliffs. This species once bred locally throughout much of California (Remson 1978). Channelization of rivers and erosion-control and bank stabilization programs are the most imminent threat to this species; almost all colonies in the Sacramento Valley will be destroyed by planned bank protection projects by the Army Corps of Engineers (Remson 1978).



The Feather River is one of the major nesting areas for bank swallows in California (Laymon et. al. 1988). Bank swallow colonies in 1987 contained 195 burrows on the right bank of the river at mile 30.8, 230 burrows on the right bank of the river at mile 35 and 100 burrows on the left bank of the river at mile 32.7 (Laymon et. al. 1988).

Swainson's hawk

This western hawk is approximately 53 cm long and has a wing span of 132 cm. The Swainson's hawk is distinguished from most other buteos by long, narrow, pointed wings. This buteo nests in riparian habitats in the Central Valley; cottonwoods (*Populus* spp.) are preferred nesting trees. Foraging areas include grasslands, oak woodland with adjacent grasslands or agricultural lands. Alfalfa and hay are preferred agricultural foraging habitats. The diet of the Swainson's hawk consists primarily of insects and mammals. The largest known population remaining in the state is located in the Davis/Woodland area of the Sacramento Valley where five to six nesting pairs have been reported per summer in the last few years (Remsen 1978). Suitable areas for nesting or nest construction were surveyed. No nest sites were observed. The reduction of the once-extensive riparian forests and grasslands that existed in the area probably has limited the distribution of this hawk.

White-faced ibis

The white-faced ibis is a medium-sized marsh wader with a long, decurved bill. Winter adult plumage is deep purplish chestnut; breeding plumage shows a white border of feathers at the base of the bill. The white-faced ibis feeds primarily on aquatic invertebrates, fish, and amphibians. Formerly a locally common breeder in freshwater marsh habitats along the length of the state, the white-faced ibis was not known to breed regularly anywhere in California by 1978 (Remson 1978). However, nesting has recently been confirmed in the Central Valley, indicating that the range of this species may be expanding into previously occupied areas.



Long-billed curlew

The long-billed curlew is a medium-sized wading bird with a long, strongly decurved bill. Adult pelage is cinnamon brown above, buff below. The long-billed curlew's diet consists mainly of insects, also worms, crustaceans, mollusks, toads, eggs and nestlings of other birds, and occasionally berries. This curlew winters in grainfields, tideflats, coastal and lake beaches, and salt marshes of California. The primary reason this species has undergone population reduction is due to habitat loss and degradation.

Tri-colored blackbird

The tri-colored blackbird has typical blackbird plumage. It is distinguished from other blackbirds by its red shoulder epaulets with broad white margins. The tri-colored blackbird nests primarily in wetland habitat characterized by cattails and tules, although nesting colonies have been found in willows (*Salix* spp.), blackberries (*Rubus* spp.), mustard (*Brassica* spp.), thistle (*Cirsium* spp.) and saltcedar (*Tamarix* spp.). They feed primarily in marshes during the summer, but also use grasslands, feedlots, and agricultural fields in winter. Seeds and vegetation make up the diet of this blackbird species. Historical tricolored blackbird nesting colonies up to 75,000 individuals breeding in cattails 8 miles southeast of Marysville in 1931; approximately 4,500 individuals breeding in cattails and tules along a slough one mile northwest of Hallwood in 1931; approximately 15,000 individuals breeding in cattails and tules along a slough 10 miles northeast of Marysville in 1931; approximately 3,000 individuals breeding in a slough northeast of Marysville in 1935; and approximately 4,500 individuals breeding in a slough south of Marysville in 1935 (NDDB 1991).

Northern harrier

This slim hawk has slightly angled wings, long body, and long tail. The white rump patch and owl-like facial disks are distinctive features of both sexes. The adult male is grayish, mostly white below, with black wing tips. The female is brown above, whitish below with heavy brown streaking on breast and flanks, lighter streaking and spotting on belly.



Harriers generally glide unsteadily close to the ground with wings upturned slightly above horizontal. The northern harrier's diet contains a high proportion of voles, but also includes birds, snakes, frogs, insects, and carrion. The harrier is found in marshes (hence the former name "marsh hawk"), fields, and prairies. Destruction of marsh habitat is undoubtedly the major reason for this species' decline (Remson 1978).

Black-shouldered kite

This kite resembles a falcon in shape, with long, pointed wings and a long tail. Adults are pale gray with white underparts and mostly white tail. In all ages, black shoulders show in both perched and flying birds. This raptor's diet is especially high in California voles and other rodents, but also includes birds, snakes, lizards, frogs, and large insects. This graceful flyer is the only North American kite that hovers while hunting. The black-shouldered kite is found in grassland, oak woodland, freshwater marshes, and agricultural habitats. Alfalfa is a favored agricultural crop type due to the high density of California voles.

Giant garter snake

The giant garter snake is found only in the Central Valley from Fresno to Butte counties. The reclamation of wetlands for agricultural development has apparently eliminated this snake from the southern San Joaquin Valley (Hanson and Brode 1980). The giant garter snake is a highly aquatic form that occurs in tule-cattails marshes along slow moving streams, sloughs, and rivers. The diet of this snake consists of amphibians and fish. The local range of the giant garter snake includes the floodplain of the Yuba and Feather Rivers and the streams, sloughs, and marshes of the Central Valley. Wetlands environments throughout the San Joaquin and Sacramento River Delta area have been drained and converted to cultivation or other agricultural uses. Intensive agricultural practices, such as tilling, grading, harvesting, pest control and weed abatement along canals and ditches has reduced the potential to support large populations of giant garter snakes. The Sacramento Valley, from the Sacramento-San Joaquin Delta north into Butte County, supports a relatively large



wetland complex. The greater availability of water in the northern valley has permitted rice and other water consumptive crops to be cultivated on a broad scale. The resulting network of irrigation canals and flood control bypasses, augmented by such waterfowl areas as the Gray Lodge Waterfowl Management Area and the Sutter National Wildlife Refuge, continues to provide suitable habitat for this species (Hanson 1980).

Northern goshawk

This accipiter is the largest in North America, ranging in California from the North Coast Ranges through the Sierra Nevada, Klamath, Cascade, and Warner mountains. It prefers middle and higher elevations, but will winter at lower elevations. It is described as having a long banded white-tipped tail with fluffy white undertail coverts, rounded wings, and distinct white eyebrow stripes. Both the crown and the area behind the eye are slaty in coloration. Prey is taken in air, on ground, or in vegetation, using fast searching flight or by a rapid dash from a perch. Its prey consists primarily of birds and small mammals. It uses mature and old growth stands of conifer and deciduous forests, interspersed with meadows and riparian habitats. Breeding begins in April in southern California and mid-June in the north. This species usually nests in dense stands on north facing slopes, typically occurring near water. Females lay in three-day intervals with an average clutch of 3. Incubation lasts about 36-41 days; after incubation all young are usually fledged by 45 days, and are independent by day 70 (Zeiner et. al. 1990).

California red-legged frog

The California red-legged frog is a large, slim-waisted frog with webbed feet. The color is reddish on the lower belly and underside of the hind legs, often overlying a basic yellowish color. It usually has a dark mask bordered by a whitish jaw stripe, with coarse black or gray, red, and yellow mottling in the groin. This species is found from near sea level to about 2,438 meters in the Sierra Nevada and Coast Ranges, from northern California into Baja California. At one time its range included parts of the Great Valley, but it is now apparently absent there. The red-legged frog frequents marshes, slow portions of



streams, lakes, reservoirs, ponds, and other locations with permanent water where dense shore growth provides good cover. It is most common in the wooded areas of the lowlands and foothills. The diet of the red-legged frog consists mainly of insects and isopods.

Sacramento splittail

The splittail is a medium to large (up to 40 cm) "minnow" (*Cyprinidae*-Minnow Family) of the lower delta. Although little has been written concerning its ecological requirements, it appears to be a minnow of backwater slough areas. It is believed to spawn over shoreline vegetation or over gravel in creek tributaries of large rivers during spring high water levels. The deep channelization of much of the Delta has no doubt destroyed much potential spawning area and has been responsible for the decline of the species (McGinnis 1984).

Valley elderberry longhorn beetle

The Valley elderberry longhorn beetle is one of three species of *Desmocerus* known from North America. The subspecies *dimorphus* is known from riparian areas in the Central Valley of California (USFWS 1984). Coloration of the beetle is variable. The coloration of the elytra (first pair of wings, generally hardened) may vary from dark metallic green, with a bright reddish-orange border to a pattern of four oblong metallic green spots. Females are larger than males, while males possess longer, more robust antennae than females (USFWS 1984). The antennae are nearly as long as the body, extending forward from the head, thus the "longhorn" designation. The life of the beetle is restricted to elderberry *Sambucus* spp. Eggs are deposited in cracks and crevasses of the bark of living elderberry trees. Presumably, the eggs hatch shortly after they are laid. The larvae bore into the pith of larger stems and roots. When the larvae are ready to pupate, they work their way up from the roots, through the pith of the elderberry, and open an emergence hole through the bark. The larvae then return to the pith to pupate. The entire lifecycle encompasses two years. Adults emerge at about the same time the elderberry flowers (USFWS 1984). The loss of up to 90 percent of riparian habitat in California has eliminated most of the Valley longhorn beetle's range.



5.3 PLANTS

Table 5-1 lists sensitive plant species that may potentially occur within Yuba County, although some may now be locally extinct.

The following plants are listed by the NDDDB as being potentially present in Yuba County:

Hartweg's pseudobahia

Hartweg's pseudobahia is a woolly annual with yellow flowers of the Sunflower Family (*Asteraceae*). Hartweg's pseudobahia is 5-20 cm high; the stem is simple or few-branched from below; leaves are 1-2 cm long. It can be found growing in dry gravelly soils or grasslands on the low rolling hills of the eastern San Joaquin Valley from Placer County to Fresno County at elevations of 30 to 305 m. Hartweg's pseudobahia is seriously threatened by agricultural development (CNPS 1988).

Veiny monardella

Veiny monardella is a purplish annual of the mint family (*Labiatae*). Veiny monardella is 10-30 cm high; the stem is erect, simple or divaricately branched; leaves are 1-3 cm long. This plant was last seen in 1935. The type locality of this plant is the plains of the Feather River near Marysville, California. Apparently, veiny monardella is a rare species that is seldom collected. In addition to the type specimen, which was collected in 1854, the only other collections known are from Butte County, 1879 and Chico Valley in 1818 (Abrams 1951).

Enterprise clarkia

This plant is an annual member of the evening primrose family *Onagraceae*. It is a federal category 3a candidate species and is on the California Native Plant Society (CNPS) List 1A, indicating that the CNPS considers it to be extinct. The only known historical occurrence of this plant is now inundated by Lake Oroville, Butte County, in dry, rocky places at about 185 meters elevation, presumably in what was foothill oak woodland. It bloomed from May to June.



Ahart's paronychia

This annual member of the pink family (*Caryophyllaceae*) is a federal category 2 candidate species and is on the California Native Plant Society (CNPS) List 1A, indicating that the CNPS considers the species to be rare, threatened, or endangered in California and elsewhere. Ahart's paronychia is restricted to the northern Sacramento Valley, where it may be threatened by trampling and grazing. It is known to occur in foothill and valley woodlands and vernal pools in Butte, Shasta, and Tehama counties. It blooms from April to June.

Ahart's dwarf rush

This annual member of the rush family (*Juncaceae*) is a federal category 1 candidate species. It also is on the CNPS List 1B. The species is known only from three occurrences in vernal pools in Butte, Calaveras, and Placer counties. It blooms from March to May.

5.4 WATERFOWL HABITAT/WETLANDS

The California Central Valley is the most important waterfowl wintering area in the Pacific Flyway, supporting 60 percent of the Flyway's ducks and geese. As a result of the loss of naturally-occurring wetlands, many waterfowl species have become highly dependent on rice fields for nesting during spring and summer and for food during winter. Rice fields provide critical habitat both for migratory and certain resident birds. Yuba County's thousands of acres of rice lands contribute significant habitat to birds and other wildlife.

The USFWS is implementing a Central Valley Wildlife Management Area, a component of the *North American Waterfowl Management Plan's* Central Valley Habitat Joint Venture (CVHJV), which encompasses Tehama, Butte, Glenn, Colusa, Yuba, Sutter, Placer, Yolo, Solano, Contra Costa, and San Joaquin Counties.

The purpose of the acquisition and management program is to preserve important remaining wetland habitat for migratory waterfowl and other wetland dependent wildlife and plants. Suitable areas that are restored to wetlands also would be preserved for the same purpose. According to the Environmental Assessment (EA) prepared for the program, "The net result of this wetland preservation and restoration program would be to enhance the quantity and quality of habitat available to waterfowl and other wetland dependent wildlife and thereby



provide for increased populations." A portion of the American Basin cuts through Yuba County. This basin lies east of the Sacramento and Feather rivers and west of the Sierra foothills between Oroville to the north and the American River on the south. Currently there are no publicly owned wetlands within this basin; however, hunting clubs maintain more than 12,000 acres, 3,200 acres occur naturally, and 8,800 acres are committed to rice cultivation (CVHJV 1990). According to the 1991 *Yuba County Agricultural Crop Report*, 32,450 acres was devoted to rice cultivation (Figure 8-1 for a generalized location of rice fields in Yuba County). Estimates of available flooded fields during critical migratory waterfowl use periods are unavailable. Although acquisition of wetland areas under the CVHJV is underway in adjoining counties, none is presently proposed in Yuba County.

In District 10², which lies north of Marysville, rice fields flooded for duck hunting after harvest provide the bulk of wetland habitats. Preliminary data, based upon radiotelemetry studies from 1987 to 1990, suggests that areas from the east side of Sacramento Valley from District 10 (duck clubs immediately northeast of Marysville) south to Sacramento are critical late winter habitat for pintails and other wintering waterfowl. Within the Olivehurst region (Bear River north to the Yuba River, east of the Feather River) 2.9 % of all radio-marked pintails use these rice fields (in February) as a late winter foraging area (Michael Miller, Wildlife Biologist, USFWS, pers. comm., September 1992). It is believed that waterfowl will use these areas at the end of hunting season, when birds are free to use more habitat areas, particularly rice fields on the east side of the valley. There is an increasing dependency on remaining rice fields as forage areas, due primarily to the inability of refuges to sustain the many thousands of waterfowl (ducks, geese, swans), and shorebirds that arrive seasonally. District 10 waterfowl use by pintails (*Anas acuta*) and white-fronted geese (*Anser albifrons*) is equal to or greater than that for several National Wildlife Refuges and Gray Lodge Wildlife Area. Estimates for 1990 indices indicate that up to 126,000 pintails and 24,000 geese may have used District 10 during peak periods.

In California, the Sacramento Valley is host to many species of wintering birds, such as mallards, tule white-faced geese, lesser snow geese, wood ducks, and wigeon. Other waterfowl species which arrive in the Sacramento Valley during early

² The USFWS's research branch refers to the areas of rice farming north and east of Marysville as District 10, which encompasses lands from the Yuba River north to Honcut Creek, and eastward from the Western Pacific Railroad right-of-way to the foothills of the Sierra Nevada Mountains. This District 10 should not be confused with County Reclamation District 10.



winter, only to migrate further south into the lower San Joaquin Valley in late winter, are Ross', cackling Canada, Aleutian Canada, and white-fronted geese, along with tundra swans. These areas also provide habitat for a variety of other species, such as sandhill cranes, egrets, herons, white-faced ibis, as well as other wading birds, tricolor blackbirds, yellow-billed cuckoo, other passerine species, northern harrier, and many more.

5.5 DEER HERDS

Deer herds throughout most of California exhibited a serious long-term decline during the late 1960's and early 1970's. The California Department of Fish and Game (CDFG) then initiated a herd planning program designed to address this problem. In 1976 a statewide *Plan for California Deer* was approved. In 1977, AB 1521 added emphasis to the program. Subsequently, a new deer management policy was adopted by the California Department of Fish and Game. This policy specifies: (1) planning for deer herd management on a herd basis, (2) that specific program elements be included in each herd plan, and (3) that herd plans generally conform to the goals of the statewide plan.

Two resident deer populations that can be found in Yuba County are the Sacramento Valley Herd and the Camp Beale Herd, both of which are a part of the Mother Lode Deer Management Unit. There are no unique biological or geographical features that define a herd's boundary. Rather, the herds are composed of resident deer populations that have similar habitat types in common (oak woodland and chaparral in the foothills and remnant marsh and riparian vegetation in the Valley). The eastern boundary of the Mother Lode Deer Management Unit is an area of overlap with neighboring migratory herds, which include the Bucks Mountain Herd, the Mooretown Herd, the Downieville Herd, Nevada City Herd and possibly the Eastern Tehama Herd. This area of overlap is variable in size and depends on topography, severity and onset of winter, and forage conditions. During winter, migratory deer may descend to low elevations and winter with resident deer. Similarly, Mother Lode deer may occupy home ranges within neighboring migratory herd winter range.

In addition to resident deer populations, Yuba County provides winter range for two migratory herds, the Mooretown Deer Herd and the Downieville Deer Herd. The Mooretown herd is located in portions of Plumas, Sierra, Butte, Nevada, and Yuba counties, and these deer winter primarily in Yuba and Sutter counties from about 400 feet to 3,500 feet elevation. Their summer range is mostly above 5,000



feet in Plumas and Sierra counties. Pressures on this herd include vegetation removal for fire suppression and other purposes on the summer range and residential encroachment into the winter range. In the Yuba County portion of this herd's range, about 50 to 60 percent of the critical winter range has been severely reduced by residential encroachment. These deer also face impacts from uncontrolled dogs, fencing that restricts their movements, poaching, drowning, and vehicular collisions (California Department of Fish and Game, attachment to letter of comment on Notice of Preparation for Yuba County General Plan EIR, December 21, 1992).

The Downieville herd occupies portions of Sierra and Yuba counties. Deer from this herd winter primarily in the portions of Yuba County upslope of Bullard's Bar Reservoir between 1,800 and 2,000 feet elevation. Summer range is above 3,500 feet in Sierra County. An estimated five to 10 percent of this herd's Yuba County habitat has been permanently altered by residential development and construction of Bullard's Bar Reservoir. It is estimated that several hundred deer from this herd winter in Yuba County (California Department of Fish and game, attachment to letter of comment on Notice of Preparation for Yuba County General Plan EIR, December 21, 1992).

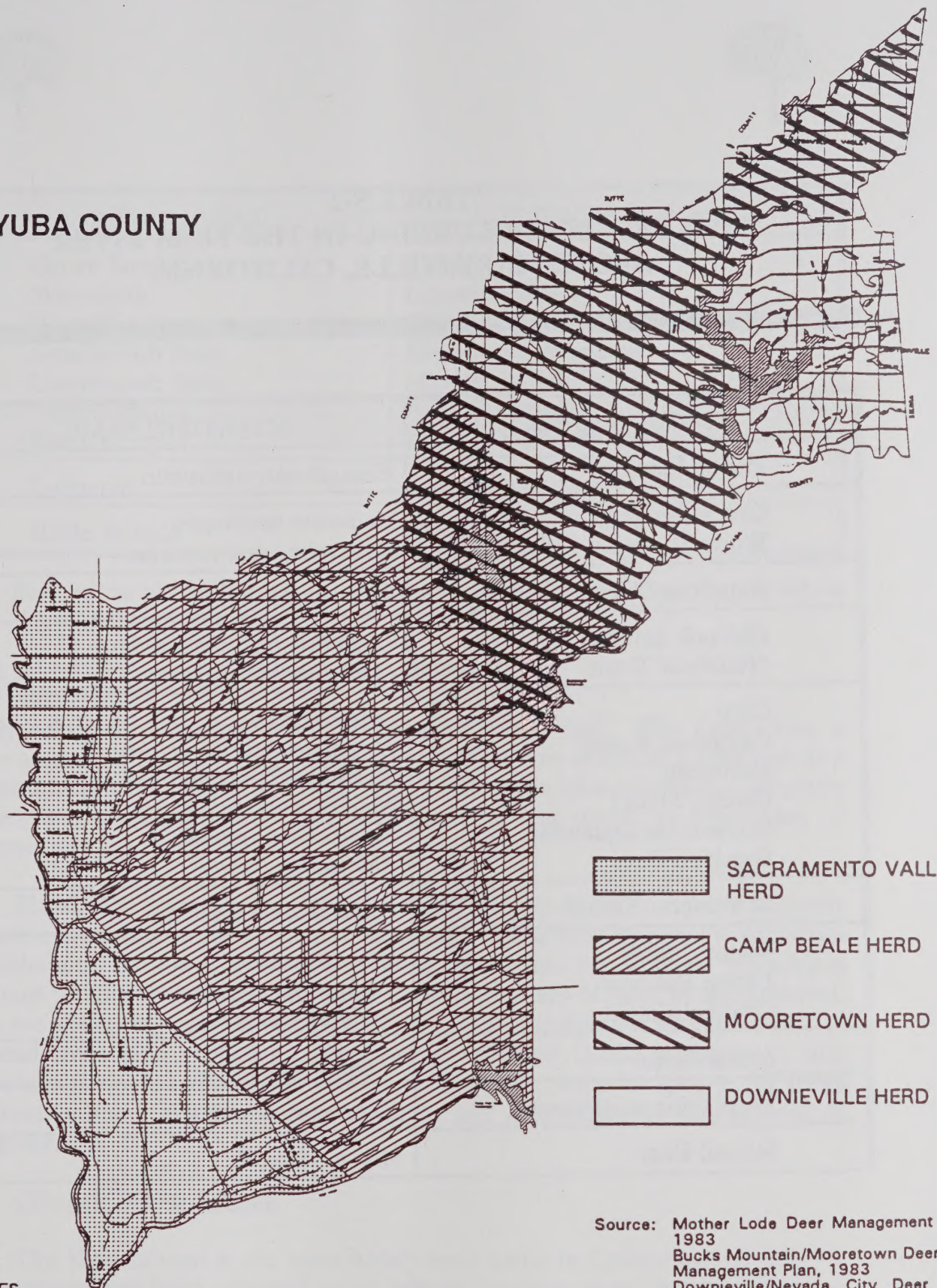
Management plans have been prepared for many of California's deer herds. These plans set goals for deer herd management and include recommendations regarding minimum parcel sizes and densities of development within critical summer and winter ranges, major migration corridors, holding areas, and non-critical summer and winter ranges. Figure 5-3 depicts generalized boundaries for deer herds that range through Yuba County.

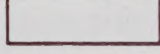
5.6 FISHERIES

California has 132 total inland fish species. Of these species, 63 are native resident or anadromous fish (i.e., species that spend at least part of their life cycle in the ocean, but return to fresh water to spawn), 25 are endemic species, 20 are native marine euryhaline species (i.e., species that can tolerate a wide range of salinity concentrations and, therefore, often travel from marine to inland waters), and 49 are introduced species (Moyle 1976). The river systems, lakes and reservoirs located in Yuba County support a variety of cold and warm water fish species. Table 5-2 lists 28 fish species which utilize the lower Yuba River.

Tributaries to the lower Sacramento River that occur in Yuba County are the Feather, Yuba and Bear rivers, and Honcut Creek (Figure 4-1; refer to Section

YUBA COUNTY



-  SACRAMENTO VALLEY HERD
-  CAMP BEALE HERD
-  MOORETOWN HERD
-  DOWNIEVILLE HERD

Source: Mother Lode Deer Management Plan, 1983
 Bucks Mountain/Mooretown Deer Herd Management Plan, 1983
 Downieville/Nevada City Deer Herd Management Plan, 1983

GENERALIZED DEER HERD BOUNDARIES

FIGURE
5-3



TABLE 5-2
FISH SPECIES OCCURRING IN THE YUBA RIVER
ABOVE MARYSVILLE, CALIFORNIA

COMMON NAME	SCIENTIFIC NAME
Pacific Lamprey	<i>Entosphenus tridentatus</i>
Green Sturgeon	<i>Acipenser medirostris</i>
White Sturgeon	<i>Acipenser transmontanus</i>
American Shad	<i>Alosa sapidissima</i>
Chinook Salmon	<i>Oncorhynchus tshawytscha</i>
*Rainbow Trout	<i>Oncorhynchus mykiss</i>
Carp	<i>Cyprinus carpo</i>
California Roach	<i>Hesperoleucas symmetricus</i>
Hardhead	<i>Mylopharodon conocephalus</i>
Golden Shiner	<i>Notemigonus crysoleucas</i>
Sacramento Squawfish	<i>Ptychocheilus grandis</i>
Speckled Dace	<i>Rhinichthys osculus</i>
Sacramento Sucker	<i>Catostomus occidentalis</i>
White Catfish	<i>Ictalurus catus</i>
Brown Bullhead	<i>Ictalurus nebulosus</i>
Channel Catfish	<i>Ictalurus punctatus</i>
Mosquitofish	<i>Gambusia affinis</i>
Threespine stickleback	<i>Gasterosteus aculeatus</i>
Striped Bass	<i>Morone saxatilis</i>



COMMON NAME	SCIENTIFIC NAME
Green Sunfish	<i>Lepomis cyanellus</i>
Warmouth	<i>Lepomis gulosus</i>
Bluegill	<i>Lepomis macrochirus</i>
Smallmouth Bass	<i>Micropterus dolomieu</i>
Largemouth Bass	<i>Micropterus salmoides</i>
White Crappie	<i>Pomoxis annularis</i>
Black Crappie	<i>Pomoxis nigromaculatus</i>
Logperch	<i>Percina caprodes</i>
Riffle Sculpin	<i>Cottus gulosus</i>

* Both resident and anadromous. The anadromous race is commonly referred to as steelhead (*Oncorhynchus mykiss gairdner*).

Source: Yuba River Fisheries Investigations, 1986-1988 (BEAK 1989).

4.0, Hydrology for a further description of these waterways). The Yuba River is unique among California's large anadromous fish streams in that it is managed as a streams in that it is managed as a wild salmon and steelhead trout stream. Hatchery facilities and supplementation of reared stock do not occur, as with many of California's valley rivers.

The CDFG management policy is to maintain the Yuba River as a naturally productive anadromous stream, and to encourage the development of the American shad fishery on the lower river. There are currently four anadromous fish species important to both commercial and sport fisheries that are in need of management. These are the spring-and fall run chinook salmon (*Oncorhynchus tshawytscha*), steelhead trout (*Oncorhynchus mykiss*), American shad (*Alosa sapidissima*), and striped bass (*Morone saxatilis*). In addition to these four, two other species, the white and green sturgeon (*Acipenser transmontanus* and *A. medirostris*), are in need of management.

Chinook (King) Salmon

The King salmon is the most widely used name in California, but chinook salmon has been adopted as its official common name by the American Fisheries Society (Moyle 1976). By far the largest salmon weighing 30 or



more pounds, they are identified by the conspicuous large black spots on their back, both caudal fin lobes, dorsal, and adipose fins, and by their black gums at the base of the teeth. Spawning adults are olive brown to dark maroon or purple in color. Spawning males usually develop a hooked jaw and a raised hump and appear darker than the females.

Spawning runs once occurred as far south as the Ventura River, but the southernmost run at present occurs in the Sacramento-San Joaquin River system (Moyle 1976). Most California chinook salmon are fall spawners, and initiate their spawning migration into the Yuba River in late September, with the majority occurring in October and November, with an occasional run as late as December and January (Beak 1989).

Steelhead/ Rainbow Trout

The sea-run rainbow trout is called a steelhead. They have numerous small irregular black spots on the tail, dorsal fin and back. Rainbow trout have a pink to red stripe on the side where as the steelhead typically lack such markings. The opercula are pinkish, the back iridescent blue to nearly brown, with the sides and belly silver, white or yellowish in color.

Rainbow trout are highly territorial and will aggressively defend their area against other co-existing fish and trout species. Juvenile steelhead migrate out to sea at one to three years of age, around 13 to 25 cm total length (TL). After one to two years they return at 38 to 69 cm TL (1.4 to 5.4 kg) to spawn. Unlike salmon, many adult steelhead can survive spawning; up to 53 percent in some populations (Beak 1989). Steelhead can occasionally reach nine years old, and most non-steelhead rainbow trout typically only reach seven years (Moyle 1976).

Both rainbow and steelhead usually spawn once a year, but it is not unusual for fish to skip a year between spawning. Both rainbows and steelhead are spring spawners, but steelhead typically migrate upstream several months before they actually spawn. In the lower Yuba River the spawning migration begins in October and may extend through January (Beak 1989). The eggs hatch within three to four weeks, and fry emerge two to three weeks later (Moyle 1976).



Unfortunately, loss of spawning habitat due to poor logging techniques, dewatering, dam construction and pollution are all cumulatively affecting this important game fish.

The 1990 *Central Valley Salmon and Steelhead Restoration and Enhancement Plan* states that most of the salmon entering the Feather River spawn in sections between Evans-Riemer Road and the Oroville Fish Barrier Dam, a distance of 19 miles. Salmon entering the Yuba River spawn mostly in the section of stream between the YSDI landfill and Rose Bar, a distance of 14 miles, once they negotiate the Daguerre Point Dam fish ladders, migration/spawning can only ascend to Englebright Dam. Some salmon spawning does occur in Deer Creek, but only when sufficient flows are provided, and only at the mouth of the creek.

Salmon runs in the Feather River have averaged 1,660 spring run and 50,200 fall run, while only 18,000 salmon make the Yuba River fall run (Reynolds et al. 1990) and for 1991 Feather River spring run was 4,300 and 41,000 for the fall run, while the Yuba River had a fall run of 14,000 (Fred Meyer CDFG, Pers. Comm. 1992). The Bear River, which is not a protected river, currently does not support a significant salmon run. Years previous this river did support runs of several thousand fish, but this was during years of heavy rainfall (Fred Meyer CDFG, pers. comm., June 1992). All these rivers are dependent upon snowmelt and the instream flow releases from various dams.

Englebright Reservoir was originally managed as a warm water fishery, however, with the construction of the New Bullard's Bar Reservoir, both now support cold and warm water fish species. The more common species include kokanee salmon, rainbow trout, brown trout, bluegill, largemouth bass, smallmouth bass, channel catfish, and white crappie. Because of the cold water releases from the New Bullard's Bar Reservoir, conditions between the two dams are now becoming more suited for salmonid than warm water species (COE 1990).

Dry Creek, Dredger Ponds and the lower Bear River all support populations of bass, crappie and other warm water species, but in years of high water flow, salmon (primarily chinook and steelhead) will utilize these areas to spawn.



Striped Bass

The Sacramento-San Joaquin estuary and river system maintain the largest population of striped bass in California. They are said to occur from Oregon to the Colorado River, with several landlocked breeding populations at Millerton Lake, Fresno-Madera counties, and San Luis Reservoir, Merced County.

These fish are very conspicuous having six to nine black horizontal stripes and sharply separated spiny- and soft-rayed portions of the dorsal fin. They are tolerant of a wide range of environmental conditions, including fresh and salt waters, wide temperature ranges, low oxygen and highly turbid waters (Moyle 1976).

Most of their life is spent in estuaries, but spawning takes place inland. Spawning may begin in April, but peak spawning periods occur in May and early June. Water temperatures of at least 14.4°C must be present for spawning to initiate, and temperatures exceeding 21.1°C will cease spawning activity (Moyle 1976). Spawning occurs en masse with thousands of fish aggregating along river banks. The spawning act occurs when members of the aggregate group, five to thirty fish, predominately males, break off and enter the main river current. Peak spawning periods are during the late afternoon and early evening (Moyle 1976).

Factors influencing larval success are temperature, salinity, predation, food availability, and pollution; however, the most important factor appears to be the amount of summer outflow through the Delta, and subsequent water diversions.

Striped bass occur in the lower Yuba River below Daguerre Point Dam. Further upstream, migration does not occur due to poorly designed fish ladders (pool and jump), which do not take into account striped bass swimming behavior. Unlike salmonids, striped bass jumping abilities are believed to be poorly developed (Beak 1989).

American Shad

American shad are large herring with thin deciduous scales, thin bodies and a saw toothed keel on their bellies. They tend to be steely blue on the back



and silvery on the sides. They are distinguished by a row of spots that start on the back just behind the operculum (Moyle 1976).

Introduced to the Sacramento River in the late 1800s, American shad have since become well established. They range from San Pedro, California to southeastern Alaska, where they spawn in the major rivers (Moyle 1976).

The main shad runs in California are in the Sacramento River up to Red Bluff and in the lower reaches of its major tributaries (particularly the American, Feather, and Yuba rivers), as well as the Mokelumne and Stanislaus rivers. Small runs are found in sloughs of the South Delta, the San Joaquin, Klamath, Russian and Eel rivers. Apparently the only landlocked population of American shad exists in Millerton Lake, Fresno-Madera counties where they were accidentally introduced (Moyle 1976).

With the exception of landlocked fish in Millerton Lake, American shad only enter fresh water in order to spawn. Most young shad move out to sea upon hatching, but a few may spend a year or so in the freshwater portions of estuaries. What happens between the three to five years between hatching and spawning is unknown (Moyle 1976).

Spawning begins in the fall when adults appear in the lower portions of estuaries to adjust to the lower salinities. They will not move until the water temperature exceeds 10 to 11°C. Peak runs and spawning usually occur in higher temperatures, 15 to 20°C. This means that shad can first be seen in late March early April, but large runs are not seen until May early June.

Spawning is a mass affair that takes place in the main channel of the rivers. Most shad die after spawning, but a few do survive return to the ocean and spawn again the following year. Warm water greatly enhances postspawning mortality (Moyle 1976).

Eggs hatch three to six days, dependent upon water temperature. The higher water temperatures promote quick hatching, but larvae survival is reduced. Most newly hatch shad gradually move out to sea, entering salt water as early as June, but generally this occurs around September-November (Moyle 1976).

A study to identify shad nursery areas in the Sacramento River System and Sacramento-San Joaquin Delta revealed that the Sacramento River above



Knights Landing, the Feather River above Yuba City and the entire American and Yuba rivers were not season-long nursery areas for juvenile shad (Beak 1989).

The lower Yuba River does support a shad sport fishery, which is generally confined to the area between Daguerre Point Dam and the confluence with the Feather River from May to June. Further migration upstream is prohibited by inadequate pool and jump type fish ladders, which few shad utilize (Beak 1989).

Sturgeon

Two species can be found in California, the white and green. These fish are characterized by their blunt rounded snout, which have barbels located underneath, close to the mouth. They have highly protrusile lips that lack teeth and a series of widely separated bony plates (scutes) along their body.

White sturgeon can be found from Mexico to Alaska, whereas the green ranges from Mexico to Japan. Spawning sturgeon have only been found in large rivers from the Sacramento-San Joaquin system north. In California large runs occur in the Sacramento and Feather rivers, but there may be small runs in the San Joaquin, Klamath, Eel, Mad, and Trinity rivers. Sturgeon spend much of their lives in estuaries of large rivers, but will migrate into fresh water to spawn. Some sturgeon make extensive saltwater migrations, while others can live their entire lives in fresh water. Exact spawning criteria are not known, however. It is believed that they probably spawn in gravel riffles or in deep holes (Moyle 1976).

Historically white sturgeon have been heavily exploited. The meat, caviar, and isinglass made this species very marketable, while the green sturgeon was claimed to be unpalatable. Overexploitation of this fishery nearly decimated California's sturgeon population. However, measures were taken and appropriate management techniques employed, and sturgeon population numbers increased. Currently these populations are now able to sustain a sport fishery.

The Sacramento River system, including the Yuba River, has historically been an important spawning area for anadromous fish. In the past the Yuba River supported 15 percent of the annual run of fall chinook salmon in the Sacramento



River Basin, but factors impacting both salmon, steelhead and other anadromous fisheries are having a detrimental effect. These fisheries, once prevalent, are now declining due to decreasing water quality, loss of accessible spawning habitat, and inadequate spawning ground conditions (water depth, flow rates, gravel size, suspended sediment loads, and water temperatures). In addition, other factors, such as straying due to confusing environmental conditions caused by El Niño, drought, pumping in the south Delta, and dam diversions with poor fish ladders, are also contributing to their decline.

Efforts should be made to encourage water quality standards. Future project developments within Yuba County should adhere to rules and regulations governing issues of water quality, erosion control, and stream alterations. Permits issued by the CDFG, COE, USFWS, and other designated trustee agencies must be obtained before project work begins. This will aid efforts to maintain and preserve California's fisheries.

5.7 WILDLIFE AREAS/ REFUGES

Yuba County has several areas identified for the conservation, preservation, and study of California's plant and wildlife. These areas include the Spenceville Wildlife Management and Recreation Area, Marysville Wildlife Area, Feather River Wildlife Area, Daugherty Hill Wildlife Area, CDFG Fish Access Areas, UC Sierra Foothill Research and Extension Center, and District 10 (which has been previously addressed). Bobelaine Audubon Sanctuary, which is in adjoining Sutter County, is also discussed below.

Spenceville Wildlife Management and Recreation Area

The Spenceville Wildlife Management and Recreation Area is located just north of Camp Far West Reservoir and borders the eastern edge of Beale Air Force Base. It encompasses 11,213 acres and is divided by Yuba and Nevada County lines. This area is operated by the CDFG and provides a legal area for hunting of all game species during regular open seasons. The principal game species taken include dove, quail, wild turkey, deer (with tags), and a few waterfowl, primarily mallards and wood ducks. The streams located within the area do not support a fishery (Dave Johnson, CDFG, pers. comm., July 1992).



Marysville Wildlife Area

The City of Marysville currently leases approximately 97 acres of land that it owns to the CDFG. The stated purpose of the lease is to encourage the preservation and enhancement of riparian wetland habitat for species such as the yellow-billed cuckoo and the Swainson's hawk. The lease was entered in 1988 and its term is indefinite.

The CDFG prepared a *Proposal for the Creation and Management of Marysville Wildlife Area*, a plan to enhance the land for wildlife and Marysville residents. Proposed development projects include improvements to the existing seasonal pond, construction of island sanctuaries, placement of wooden duck boxes, creation of a permanent fishing pond with placement of fish habitat structures on the lake bottom, tree planting, general cleanup of rubble and debris, and installation of barriers to prevent unauthorized vehicle access (QUAD, 1992).

Feather River Wildlife Area

The Feather River Wildlife Area is managed by the CDFG and is located 10 miles south of Marysville along the Feather River, in both Yuba and Sutter counties. This wildlife area is comprised of Management Units, which are: Abbott Lake, Star Bend, O'Connor Lakes, Nelson Slough, and Lake of the Woods. The purposes of these lands are rookery protection (178 acres) and preservation of 2,106 acres of riparian habitat. Habitat description on these units varies from mature riparian forest with tall cottonwood, sycamore and willow trees to grassy fields. The understory consists of blackberry, wild rose and wild grape. Native species of wildlife are abundant and consist of beaver, river otter, ringtail, opossum, raccoon, squirrels, waterfowl, quail, wild turkey, deer and many other wildlife species. There is no camping allowed, but fishing, hunting, photography and bird watching are popular activities (J. Karlton, CDFG, pers. comm., October 1992)

Daugherty Hill Wildlife Area

Near Merle Collins Reservoir, located 3 miles south of the community of Oregon House, is the Daugherty Hill Wildlife Area. Managed by the CDFG and encompassing 2,372 acres, this land was purchased for winter deer range habitat. Most of the habitat is described as oak-grassland, with various upland



wildlife species including wild turkey, quail, dove, and deer (J. Karlton, CDFG, pers. comm., October 1992).

CDFG Fish Access Areas

The CDFG also manages several fishing access areas. The nine-acre Starbend Fishing Access is located nine miles south of Marysville on the east bank of the Feather River, and the Yuba River Fishing Access areas are located between Yuba Gap and Cisco Grove and in Marysville.

UC Sierra Foothill Research and Extension Center

The UC Sierra Foothill Research and Extension Center is located near Browns Valley in northern California. This station is one of nine agricultural field research stations in California administered by Agricultural Field Stations Division of Agriculture and Natural Resources, University of California. The station encompasses 5,720 acres and borders the Yuba River and Englebright Reservoir. It ranges in elevation from 22 feet at the Yuba River to 2,020 feet on Koch Mountain. The station, purchased in the early 1960s from the Forbes, Wright, Burris, and Marty families, provides opportunities to study beef cattle production and management practices, watershed management, wildlife and botanical populations, alternative crops for foothill lands, and recreation uses.

The surrounding vegetation is oak woodland/ savanna, dominated by blue oak and interior live oak. At the higher elevations, digger pines (gray pines), black oak and ponderosa pines become frequent. Common shrubs include black-brush, toyon and poison oak. Major forbs include filaree, annual clover, and geranium. Common annual grass species are soft chess, ripgut brome, red brome, annual fescue, wild oats, and medusahead. Perennial grasses include purple stipa.

Wildlife utilizing this area includes deer, many small animals (including ring-tail cat), coyote, quail, wild turkey, raptors, and songbirds. A more complete species list, Tables 5-3 and 5-4, was taken from a 1987-1988 study conducted on the UC Sierra Foothill Research and Extension Center and is assumed generally indicative, of similar habitats located throughout the county.



Bobelaine Audubon Sanctuary

Bobelaine Audubon Sanctuary is located 20 miles south of Marysville, along the west bank of the Feather River (Sutter County), directly across from the mouth of the Bear River. The sanctuary contains 430 acres and is in close proximity to the Feather River Wildlife Area managed by CDFG in Yuba County. A diverse near-natural habitat thrives, exhibited by the diversity of plant and animal species sharing the riparian and oak woodland communities. Within the sanctuary, it has been determined that 126 plant, 144 bird, and about 39 mammal species exist.

The Bobelaine Sanctuary is a natural park-like area, but hunting, fishing, and horseback riding are prohibited. Encroachment of urban development on surrounding lands could potentially increase vandalism and illegal poaching of plants and wildlife are a major concern and will have to be addressed, if the management of the sanctuary is to remain in its current state (Sacramento Audubon Society 1982).

During the preparation of this Paper, the Sanctuary was closed due to a recent fire which began September, 25, 1992, and possible reopening dates were unknown. The damage is still being assessed and will quite possibly change the area drastically (Jan Clark, Co-manager; Chairperson of the Bobelaine Audubon Sanctuary Committee, pers. comm., October 1992). A revegetation plan and revision of the master plan are currently underway.

5.8 TIMBERLANDS

The *Yuba County Land Use Element*, amended 1988, states that 72,000 acres of forest lands are held by the U.S. Forest Service, the Bureau of Land Management, and commercial timber companies. About 28,000 acres are held by private owners. In addition, approximately 27,400 acres of privately held forested lands have the land use designation of timber preserve. These areas have been identified as important timber harvesting areas and are subject to all provisions of the Z'berg-Warren-Keene-Collier Forest Taxation Reform Act of 1976, now known as the Timberland Productivity Act of 1982 (Figure 8-1 inserted separately at the back of this document).



TABLE 5-3
BIRD SPECIES LIST DETECTED AT THE SIERRA FOOTHILL
RANGE FIELD STATION, YUBA COUNTY, CALIFORNIA

COMMON NAME	SCIENTIFIC NAME
Great egret	<i>Casmerodius albus</i>
Great-blue heron	<i>Ardea herodias</i>
Tundra swan	<i>Cygnus columbianus</i>
Common merganser	<i>Mergus merganser</i>
Killdeer	<i>Charadrius vociferus</i>
Turkey vulture	<i>Cathartes aura</i>
Golden eagle	<i>Aquila chrysaetos</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Sharp-shinned hawk	<i>Accipiter striatus</i>
Cooper's hawk	<i>Accipiter cooperii</i>
Osprey	<i>Pandion haliaetus</i>
American kestrel	<i>Falco sparverius</i>
Prairie falcon	<i>Falco mexicanus</i>
California quail	<i>Callipepla californica</i>
Mountain quail	<i>Oreortyx pictus</i>
Ring-necked pheasant	<i>Phasianus colchicus</i>
Hairy woodpecker	<i>Picoides villosus</i>
Nuttall's woodpecker	<i>Picoides nuttallii</i>
Western kingbird	<i>Tyrannus verticalis</i>
Ash-throated flycatcher	<i>Myiarchus cinerascens</i>
Olive-sided flycatcher	<i>Contopus borealis</i>
Western wood-peewee	<i>Contopus sordidulus</i>
Black phoebe	<i>Sayornis nigricans</i>
Say's phoebe	<i>Sayornis saya</i>



COMMON NAME	SCIENTIFIC NAME
Gray flycatcher	<i>Empidonax wrightii</i>
Dusky flycatcher	<i>Empidonax oberholseri</i>
Hammond's flycatcher	<i>Empidonax hammondii</i>
Pacific-slope flycatcher	<i>Empidonax difficilis</i>
Tree swallow	<i>Tachycineta bicolor</i>
Violet-green swallow	<i>Tachycineta thalassina</i>
Bank swallow	<i>Riparia riparia</i>
Barn swallow	<i>Hirundo rustica</i>
Wild turkey	<i>Meleagris gallopavo</i>
Band-tailed pigeon	<i>Columba fasciata</i>
Mourning dove	<i>Zenaida macroura</i>
Barn-owl	<i>Tyto alba</i>
Great-horned owl	<i>Bubo virginianus</i>
Western screech owl	<i>Otus kennicottii</i>
Northern pygmy owl	<i>Glaucidium gnoma</i>
Anna's hummingbird	<i>Calypte anna</i>
Calliope hummingbird	<i>Stellula calliope</i>
Rufous hummingbird	<i>Selasphorus rufus</i>
Allen's hummingbird	<i>Selasphorus sasin</i>
Northern flicker	<i>Colaptes auratus</i>
Acorn woodpecker	<i>Melanerpes formicivorus</i>
Lewis's woodpecker	<i>Melanerpes lewis</i>
Red-breasted sapsucker	<i>Sphyrapicus ruber</i>
Downy woodpecker	<i>Picoides pubescens</i>
Western bluebird	<i>Sialia mexicana</i>
Townsend's solitaire	<i>Myadestes townsendi</i>
Hermit thrush	<i>Catharus guttatus</i>
American robin	<i>Turdus migratorius</i>



COMMON NAME	SCIENTIFIC NAME
Scrub jay	<i>Aphlocoma coerulescens</i>
Steller's jay	<i>Cyanocitta stelleri</i>
American crow	<i>Corvus brachyrhynchos</i>
Common raven	<i>Corvus corax</i>
Wrentit	<i>Chamaea fasciata</i>
Plain titmouse	<i>Parus inornatus</i>
Mountain chickadee	<i>Parus gambeli</i>
Bushtit	<i>Psaltirparus minimus</i>
Brown creeper	<i>Certhia americana</i>
White-breasted nuthatch	<i>Sitta coralinensis</i>
Red-breasted nuthatch	<i>Sitta canadensis</i>
House wren	<i>Troglodytes aedon</i>
Bewick's wren	<i>Thryomanes bewickii</i>
Canyon wren	<i>Catherpes mexicanus</i>
Ruby-crowned kinglet	<i>Regulus calendula</i>
Blue-gray gnatcatcher	<i>Poliopitila caerulea</i>
Black-headed grosbeak	<i>Pheucticus melanocephalus</i>
Lazuli bunting	<i>Passerina amoena</i>
Rufous-sided towhee	<i>Pipilo erythrophthalmus</i>
California towhee	<i>Pipilo crissalis</i>
Loggerhead shrike	<i>Lanius ludovicianus</i>
Northern mockingbird	<i>Mimus polyglottos</i>
Cedar waxwing	<i>Bombycilla cedrorum</i>
Phainopepla	<i>Phainopepla nitens</i>
European starling	<i>Sturnus vulgaris</i>
Hutton's vireo	<i>Vireo huttoni</i>
Solitary vireo	<i>Vireo solitarius</i>
Warbling vireo	<i>Vireo gilvus</i>



COMMON NAME	SCIENTIFIC NAME
Orange-crowned warbler	<i>Vermivora celata</i>
Nashville warbler	<i>Vermivora ruficapilla</i>
Yellow-rumped warbler	<i>Dendroica coronata</i>
Black-throated gray warbler	<i>Dendroica nigrescens</i>
Townsend's warbler	<i>Dendroica townsendi</i>
Hermit warbler	<i>Dendroica occidentalis</i>
Yellow warbler	<i>Dendroica petechia</i>
MacGillivray's warbler	<i>Oporornis tolmiei</i>
Wilson's warbler	<i>Wilsonia pusilla</i>
Yellow-breasted chat	<i>Icteria virens</i>
Cliff swallow	<i>Hirundo pyrrhonota</i>
Song sparrow	<i>Melospiza melodia</i>
Lark sparrow	<i>Chondestes grammacus</i>
Rufous-crowned sparrow	<i>Aimophila ruficeps</i>
Chipping sparrow	<i>Spizella passerina</i>
Dark-eyed junco	<i>Junco hyemalis</i>
White-crowned sparrow	<i>Zonotrichia leucophrys</i>
Golden-crowned sparrow	<i>Zonotrichia atricapilla</i>
Fox sparrow	<i>Passerella iliaca</i>
Western meadowlark	<i>Sturnella neglecta</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Brewer's blackbird	<i>Euphagus cyanocephalus</i>
Northern oriole	<i>Icterus galbula</i>
Western tanager	<i>Piranga ludoviciana</i>
Pine siskin	<i>Carduelis pinus</i>
American goldfinch	<i>Carduelis tristis</i>
Lesser goldfinch	<i>Carduelis psaltria</i>
Purple finch	<i>Carpodacus purpureus</i>



COMMON NAME	SCIENTIFIC NAME
House finch	<i>Carpodacus mexicanus</i>

Source: Block, W.M. and M.L. Morrison. 1990. Wildlife diversity of the central Sierra foothills. In California Agriculture. 44(2):19-22.



TABLE 5-4
OTHER WILDLIFE SPECIES DETECTED AT
THE SIERRA FOOTHILL RANGE FIELD STATION
YUBA COUNTY, CALIFORNIA

COMMON NAME	SCIENTIFIC NAME
Amphibians	
California slender salamander	<i>Batrachoseps attenuatus</i>
Foothill yellow-legged frog	<i>Rana boylei</i>
Reptiles	
Western fence lizard	<i>Sceloporus occidentalis</i>
Western skink	<i>Eumeces skiltonianus</i>
Southern alligator lizard	<i>Gerrhonotus multicarinatus</i>
Racer	<i>Coluber constrictor</i>
Ring-necked snake	<i>Diadophis punctatus</i>
California whipsnake	<i>Masticophis lateralis</i>
Western rattlesnake	<i>Crotalus viridis</i>
Mammals	
Brush mouse	<i>Peromyscus boylii</i>
Pinyon mouse	<i>Peromyscus truei</i>
Deer mouse	<i>Peromyscus maniculatus</i>
Western harvest mouse	<i>Reithrodontomys megalotis</i>
Duskey-footed woodrat	<i>Neotoma fuscipes</i>
Botta's pocket gopher	<i>Thomomys bottae</i>
California vole	<i>Microtus californicus</i>
Ornate shrew	<i>Sorex ornatus</i>
Coyote	<i>Canis latrans</i>
Mule deer	<i>Odocoileus hemionus</i>
Ringtail	<i>Bassariscus astutus</i>

Source: Block, W.M. and M.L. Morrison. 1990. Wildlife diversity of the central Sierra foothills. In California Agriculture. 44(2):19-22.



Two national forests share the eastern section of Yuba County, the Plumas National Forest (PNF) which lies to the northeast, and the Tahoe National Forest (TNF) to the southeast. Both forests rely on a *Timber Management Plan*, which establishes those lands available for commercial forest use, estimates potential timber yield (or "allowable cut") and provides direction for silviculture and harvest methods, reforestation, timber stand improvement, and fuelwood management.

According to the 1988 *Plumas National Forest Land and Resource Management Plan*, the PNF produces about 4 percent of California's timber. This is attributed to the PNF's large share of timberlands and a high productivity level. About 66 percent of the forest now produces commercial timber.

Timber yield in the PNF was 242,817 MMBF (Million Board Feet) for 1991; from October 1991 to June 1992 it was 103,936 MMBF; and for the month of July (1992) 19,788 MMBF were taken (Gail DuPont, pers. comm., September 1992). It is estimated that the Forest has a potential for annual yields of 251 MMBF/year, but Congressional funding has generally limited this to an actual harvest of 205 MMBF/year.

The current existing timber inventory for the PNF is approximately 25 billion board feet. Nearly one-half of this volume is white fir (*Abies concolor*) and red fir (*Abies magnifica*). Commercial pines, such as Ponderosa pine (*Pinus ponderosa*), Jeffery pine (*Pinus jefferyi*), and Sugar pine (*Pinus lambertiana*) comprise one-third of the existing volume.

The 1990 *Tahoe National Forest Land and Resource Management Plan* indicates that 39.9 percent of the TNF is allocated for timber, and approximately 147.6 MMBF are programmed for annual harvest. Harvest data for the TNF indicates yields of 95.4 MMBF were taken during the 1991 Fiscal Year (FY) (October 1, 1990 through September 30, 1991). For FY 1992, roughly 70 MMBF have been harvested through August, with estimated projections of approximately 85-90 MMBF (+/- 5 MMBF) for the annual total (Sandy de Cordova, pers. comm., September 1992).

Of the 1,175,535 acres encompassed by the TNF, only 20,494 acres actually are located in Yuba County; therefore, areas harvested within Yuba County would account for only a percentage of total timber harvest for this National Forest. Approximately 35,506 acres of the PNF are located in Yuba County. According to the *Yuba County General Plan Open Space and Conservation Element*, (1973) the TNF and PNF encompass over 56,000 acres in the county.



Timber harvesting is not the only function of the national forests. Many other land uses provide recreational experiences as well, such as hunting, fishing, backpacking and many other enjoyable outdoor activities. Through careful management practices, human impacts to wildlife and plants should be kept in accord.

Receipts are paid to the County by the two National Forests to be shared equally between the public schools and the road fund. The program is commonly referred to as the "25% receipts program," since local government receives 25 percent of the revenues generated from Forest activities. The function may also be referred to as an "in-lieu of tax receipts" program, since the purpose of the program is to reimburse local government for lost property tax. Total Forest revenues are taken into consideration and may include, in addition to timber harvest receipts, revenues from recreational use permits, grazing fees and mining as well as other activities.

Many national forests are currently revising or supplementing their management plans due to pending issues and concerns attributed to the Spotted owl (*Strix occidentalis*). In so doing, timberlands with suitable owl habitat will be set aside as a result of subsequent Habitat Conservation Plans (HCPs), thus potentially reducing the national forests' annual timber yields.

5.9 REGULATORY FRAMEWORK

The *General Plan Update* and certain subsequent projects will require preparation of an environmental impact report pursuant to the California Environmental Quality Act (CEQA). As identified in Section 21002.1(a) of CEQA the purpose of an environmental impact report is to identify the significant effects of a project on the environment, to identify alternatives to the project, and to indicate the manner in which these significant effects can be mitigated or avoided. The National Environmental Policy Act (NEPA) is similar to CEQA in many regards, with the exception that it applies to federal projects or projects with which a federal agency is involved.

Section 15382 of the *CEQA Guidelines* defines a significant effect as:

"Significant effect on the environment" means a substantial, or potentially substantial, adverse change in any physical condition within the area affected by the project including land, air, water, minerals,



flora, fauna, ambient noise, and objects of historic or aesthetic significance.

Section 15065 of the *CEQA Guidelines* provides for mandatory findings of significance:

The project has the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory.

According to Appendix G of the *CEQA Guidelines* a project will normally have a significant effect on the environment if it will:

- Substantially affect a rare or endangered species of animal or plant or habitat of the species.
- Interfere substantially with the movement of any resident or migratory fish or wildlife species.
- Substantially diminish habitat for fish, wildlife, or plants.

A "rare or endangered species," as defined in Section 15380 of the *CEQA Guidelines*, is "endangered" when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors; or "rare" when the species is likely to become endangered within the foreseeable future throughout all or a portion of its range and may be considered "threatened" as that term is used in the Federal Endangered Species Act.

The Federal Endangered Species Act (FESA) of 1973 (50 CFR 17) provides legal protection, and requires definition of critical habitat and development of recovery plans for plant and animal species in danger of extinction. California has similar mandates in the California Endangered Species Act (CESA) of 1984 and the California Native Plant Protection Act of 1977. These laws regulate the process by which plant or animal species are listed as endangered or threatened. Some species listed by the State are not necessarily protected by the federal protection agencies,



therefore consultation with both the USFWS and the CDFG should occur when reviewing projects and their potential impacts to plants, wildlife, and their associated habitats.

In addition to federal and state endangered and threatened listings, species may also be listed as a "species of concern" due to their limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value. These species are not afforded the same legal protection as listed species, but may be added to official lists in the future. There are two general categories for these special interest species: 1) candidates for official federal or state listing as threatened or endangered; and 2) species that are not candidates, but have been unofficially identified as species of special interest by private conservation organizations or local governments.

Federal candidate species are assigned to one of two categories depending on current knowledge about the species and its biological importance for listing. Federal Category 1 (FC1) include candidate species for which the USFWS has sufficient biological information to support a proposal to list a species as endangered or threatened; and Federal Category 2 (FC2) where taxa for which existing information may warrant listing, but substantial biological information to support proposed listing is lacking.

The CDFG in conjunction with the California Native Plant Society (CNPS) have compiled a data base, called the California Natural Diversity Data Base (NDDDB), which references California's rare and endangered plants and animals. Some plants listed by the CNPS may not officially listed by the state, but many of these would still protected by CEQA; any impacts affecting these species and their immediate habitat, would be considered significant.

Section 9 of the Federal Endangered Species Act prohibits the "taking" of listed species. If it is believed that a project will inadvertently harm, harass, collect, or that a listed species would suffer due to habitat modification, the USFWS must be consulted, and subsequent agency recommendations, and permits must be obtained and adhered to.

If disruption of wetlands is to occur, contact with the U.S. Army Corps of Engineers (COE) must be made. Through the COE permitting program, either a Nationwide Permit No. 26, or a Clean Water Act Section 404 permit may be required, depending on how many acres of wetland are to be affected. If fewer than



ten acres are affected, a Nationwide Permit No. 26 should be obtained, for larger areas a Section 404 Permit is typically required. The COE has jurisdictional authority when wetlands are concerned; however, the EPA may supersede decisions made by the COE and thus make final determinations on the extent of Clean Water Act jurisdiction. Specific exemptions from Section 404 requirements include: normal farming, silviculture, and ranching practices, as well as maintenance and emergency reconstruction of dikes, levees, drainage ditches, and other existing structures.

Section 404 of the Clean Water Act (CWA) regulates the discharge of fill materials into waters of the United States, including wetlands. In order to be considered a jurisdictional wetland, based on the COE 1987 *Federal Manual for Identifying and Delineating Jurisdictional Wetlands*, three criteria must be met: 1) Wetland Hydrology- the inundation or saturation of surface or ground water for at least two weeks during an average rainfall year, 2) Hydric Soils- soils that develop from anaerobic conditions due to saturation, flooding, or ponding water, and 3) Hydrophytic Vegetation- plants that occur in water, or in soils deficient in oxygen content (hydrophytes).

These criteria, established by the COE and other agencies, are designed to help formulate a standardized methodology. Recently, there has been increasing public and legislative controversy regarding these criteria, resulting in new efforts to further redefine wetlands delineation requirements, but until then, the 1987 manual should be used to identify and delineate wetlands that are potentially subject to Section 404.

A "Streambed Alteration Agreement," pursuant to CDFG Code Section 1601-1603, must be entered with the CDFG when a project will influence or divert the natural flow of a stream, substantially change its bed or bank, cross a stream bed, or utilize existing streambed materials. The CDFG is also involved in the Section 404 process by providing recommendations for mitigation measures. During the 1601-1603 process it may be decided that a Section 401 permit for water quality may also be required.



SECTION SIX
NOISE



SECTION SIX NOISE

6.1 EXISTING NOISE LEVEL CRITERIA

The existing Yuba County General Plan *Noise Element* (adopted August 1980), contains objectives for acceptable noise exposure for several land use designations. The recommended noise level criteria are summarized in Table 6-1.

**TABLE 6-1
RECOMMENDED AMBIENT ALLOWABLE
NOISE LEVEL OBJECTIVES**

Land Use	7 a.m. to 10 p.m.	10 p.m. to 7 a.m.
Low Density Residential	50 dB	50 dB
Multi-Family Residential	55 dB	50 dB
Schools	45 dB	45 dB
Retail/Commercial	60 dB	55 dB
Passive Recreation Areas	45 dB	45 dB
Active Recreation Areas	70 dB	70 dB
Hospitals/Mental Facilities	45 dB	40 dB
Agriculture	50 dB	50 dB
Neighborhood Commercial	55 dB	55 dB
Professional Office	55 dB	55 dB
Light Manufacturing	70 dB	65 dB
Heavy Manufacturing	75 dB	70 dB

Source: Yuba County Noise Element, August 1980



The *Noise Element* does not specify if the noise level objectives contained in Table 6-1 represent maximum or average noise levels. It is not likely that the standards were intended to represent maximum noise levels ($L_{\max}^1$), as the passage of a single car within 50 feet would exceed a 45 dB standard. It is most likely that the Table 6-1 standards were intended to represent average hourly noise levels, or L_{eq} . Standards specified in this manner are usually applied to stationary noise sources, such as mining operations, industrial processing or HVAC equipment.

To assess noise levels due to transportation noise sources, the Day-Night Average Level (L_{dn}) or the Community Noise Equivalent Level (CNEL) descriptors are most commonly used, and are shown to correlate well with human annoyance to these types of noise sources. The L_{dn} metric represents the average noise level for a 24-hour period, with a 10 decibel penalty added to noise occurring during nighttime (10 pm - 7 am) hours. The CNEL descriptor is identical to the L_{dn} descriptor, except that CNEL also applies a 4.77 dB penalty to noise occurring during evening hours (7 pm - 10 pm). Noise levels described by L_{dn} and CNEL will usually not differ by more than 1 dB. Although the *Noise Element* does not contain noise standards in terms of these descriptors, County staff has stated that these descriptors are commonly used to assess aircraft, railroad and roadway traffic noise levels in Yuba County.

The Yuba County staff has also indicated that the Housing and Urban Development (HUD) exterior noise level guidelines are presently used for evaluating new residential developments adjacent to roadway noise sources. The HUD guidelines indicate that an exterior noise exposure of 65 dB L_{dn} is acceptable.

The California Office of Noise Control (ONC) recommends that a 60 dB L_{dn} or CNEL exterior noise level standard is generally acceptable for residential units without any additional noise mitigation features included into the project. The ONC also establishes a 45 dB L_{dn} /CNEL interior noise level standard for residential units. The ONC recommends noise exposure guidelines for a variety of other land uses.

¹ For an explanation of terms used in this Section, see Appendix B.



6.2 EXISTING COMMUNITY NOISE

Typically, a community noise survey is conducted to document noise exposure in areas of the county containing noise sensitive land uses. A community noise survey was not conducted for the existing *General Plan Noise Element*. Therefore no documentation of noise levels within the county exists. However, the majority of Yuba County is rural in nature. Areas of the county which are not urbanized are expected to be subjectively considered relatively quiet. The more urbanized areas within the county are expected to be subjected to higher noise levels due to roadway traffic, and other human activities.

The major noise sources within Yuba County are roadway traffic on State routes and major arterials; railroad operations along two major railroad tracks which traverse the county; aircraft operations at Beale Air Force Base (AFB), Yuba County Airport, and Brownsville Aero Pines Airport; and fixed noise sources which may include industrial processing, mining, and commercial activities. People who live within the influence of these facilities may be subjected to noise levels which could be considered annoying.

6.3 EXISTING TRAFFIC NOISE

The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA RD-77-108) is employed for the prediction of traffic noise levels. The FHWA model is the analytical method currently favored for traffic noise prediction by most State and local agencies, including the California Department of Transportation (Caltrans). The model is based upon the CALVENO noise emission factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site.

The FHWA model was developed to predict hourly L_{eq} values for free-flowing traffic conditions, and is considered to be accurate within 1.5 dB. To predict L_{dn} values, it is necessary to determine the day/night distribution of traffic and adjust the traffic volume input data to yield an equivalent hourly traffic volume.



Traffic data were obtained from Caltrans and kdAnderson Transportation Engineers to determine existing traffic volumes for the State routes and major arterials of concern. Day/night traffic distribution and truck mix data were obtained from Caltrans and file data. Appendix B summarizes the assumptions used in the FHWA model for determining roadway traffic noise levels. Table 6-2 shows the distances from the centerlines of selected roadways to the 60 and 65 dB L_{dn} traffic noise contours.

In some cases, the actual distances to noise level contours may vary from the distances predicted by the FHWA model. Factors such as roadway curvature, roadway grade, shielding from local topography or structures, elevated roadways, or elevated receivers may affect actual sound propagation. Therefore the distances reported in Table 6-2 are estimates of noise exposure along roadways in Yuba County. Figures 1 through 11, included in Appendix B, show the locations of the 60 dB L_{dn} traffic noise contours. Maps of a larger scale are available at the County Planning and Building Services Department.

TABLE 6-2
NOISE CONTOUR DATA
DISTANCE (FEET) FROM CENTERLINE OF ROADWAY
TO L_{dn} CONTOURS

Roadway/Segment	Description	Existing Distance	
		60 dB	65 dB
State Route 65:			
1	Placer County Line to South Wheatland City Limits	261	121
2	North Wheatland City Limits to South Beale Road	241	112
3	South Beale Road to Forty Nine Mile Road	249	116
4	Forty Mile Road to Junction Route 70	260	121



Roadway/Segment	Description	Existing Distance	
		60 dB	65 dB
State Route 65:			
State Route 70:			
5	Sutter County Line to Feather River Boulevard	267	124
6	Feather River Boulevard to McGowan Parkway	255	119
7	McGowan Parkway to State Route 65	292	135
8	State Route 65 to Olivehurst Avenue	449	208
9	Olivehurst Avenue to Erle Road	483	224
10	Erle Road to Feather River Boulevard	510	233
11	Feather River Boulevard to North Beale Road	578	268
12	North Beale Road to Yuba River Bridge	757	351
13	North Marysville City Limit to Laurellen Road	302	140
14	Laurellen Road to Woodruff Lane	281	130
15	Woodruff Lane to Butte County Line	251	116
State Route 20:			
16	East Marysville City Limit to Hallwood Boulevard	217	101
17	Hallwood Boulevard to Loma Rica Road	204	95
18	Loma Rica Road to Marysville Road	180	84
19	Marysville Road to Smartville Road	124	58
20	Smartville Road to Nevada County Line	162	75
Lindhurst Avenue:			
21	Olivehurst Avenue to Hammonton Road West	142	66
22	Hammonton Road West to North Beale Road	106	49
Arboga Road:			
23	Feather River Boulevard to Laurel Avenue	95	44
24	Laurel Avenue to Grand Avenue	80	37
25	Grand Avenue to Pasado Road	68	32
26	Pasado Road to Seventh Avenue	74	35
27	Seventh Avenue to McGowan Parkway	78	36
28	McGowan Parkway to Plumas Arboga Road	78	36



Roadway/Segment	Description	Existing Distance	
		60 dB	65 dB
State Route 65:			
Olivehurst Avenue:			
29	McGowan Parkway to Beverly Avenue	50	23
30	Beverly Avenue to Fourteenth Street	54	25
31	Fourteenth Street to Sixth Street	174	81
32	Sixth Street to Lindhurst Avenue	172	80
McGowan Parkway:			
33	Arboga Road to Olivehurst Avenue	64	30
34	Olivehurst Avenue to Fleming Avenue	73	34
35	Fleming Avenue to Powerline Road	138	64
36	Powerline Road to State Route 70	138	64
37	State Route 70 to State Route 65	71	33
North Beale Road:			
38	State Route 70 to Feather River Boulevard	83	38
39	Feather River Boulevard to Lindhurst Avenue	166	77
40	Lindhurst Avenue to Avondale Avenue	210	97
41	Avondale Avenue to Linda Avenue	217	101
42	Linda Avenue to Griffith Avenue	112	52
43	Griffith Avenue to Beale AFB	92	43
Hammonton Smartville Rd.			
44	North Beale Road to Simpson Lane	98	45
45	Simpson Lane to Griffith Avenue	62	29
46	Griffith Avenue to Bryden	62	29
47	Bryden Road to Beale AFB/Dollittle Gate	53	25
Feather River Boulevard:			
48	North Beale Road to Grand Avenue	145	67
49	Grand Avenue to Murphy Road	64	30



Roadway/Segment	Description	Existing Distance	
		60 dB	65 dB
State Route 65:			
State Route 49:			
50	Nevada County Line to Celestia Valley Road	137	63
51	Celestia Valley Road to Marysville Road	125	58
52	Marysville Road to Camptonville Road	103	48
53	Camptonville Road to Sierra County Line	92	43

Source: Brown-Buntin Associates, August 1992.

6.4 EXISTING RAILROAD NOISE

Railroad activity in Yuba County includes freight and Amtrak activity on the Southern Pacific Railroad (SPRR) trackage, and freight activity on the Western Pacific Railroad trackage, which is owned by the Union Pacific Railroad (UPRR). The SPRR trackage within Yuba County generally follows State Routes 65 and 70 from Marysville to the south border of the county. The UPRR trackage is adjacent to State Route 70.

Operational information obtained from the SPRR Roseville office indicates that approximately 18 freight trains and 2 passenger trains operate daily on the northbound/southbound trackage through the county. Freight train operations occur on an unscheduled basis throughout the daytime and nighttime periods, and Amtrak operations occur during the daytime period.

The chief dispatcher's office of the UPRR reports that approximately 10 freight trains per day operate along the trackage. Freight train operations occur on an unscheduled basis throughout the daytime and nighttime periods.

Noise level measurements were conducted for previous projects at locations adjacent to each of the mainline railroad tracks within Yuba County. The noise level measurements were conducted to determine the contribution of railroad operations to the area noise environment.



The purpose of using the noise level measurements was to determine typical sound exposure levels (SEL) for railroad operations in those areas, accounting for the effects of local topography, train speed and other factors which may affect noise generation. The results of the railroad noise measurements are shown in Table 6-3. The noise level measurements shown in Table 6-3 do not include noise from use of warning horns. Railroad operation noise levels near at-grade railroad crossings may be between 5 and 10 dB higher than those reported in Table 6-3.

TABLE 6-3
AVERAGE RAILROAD NOISE LEVEL MEASUREMENTS
Yuba County

Railroad	Train Type	Distance (feet)	Sound Level, dB*	
			$L_{\max}$	SEL
SPTCo	Freight	100	89.3	98.7
	Amtrak	100	83.0	89.4
UPRR	Freight	100	89.5	99.4

* Train operation noise levels do not include use of warning horns.

Source: Brown-Buntin Associates, August 1992.

To determine the distances to the 60 and 65 dB railroad L_{dn} contours, it was necessary to calculate the L_{dn} for typical freight and passenger train operations for each of the railroad tracks which traverse Yuba County. This was done using the SEL data shown in Table 6-3 and the above-described number and distribution of daily freight and passenger train operations. The L_{dn} contribution may be calculated as follows:



$$L_{dn} = \overline{SEL} + 10 \log N_{eq} - 49.4 \text{ dB, where:}$$

$\overline{SEL}$ is the mean SEL of the event, N_{eq} is the sum of the number of daytime events (7 a.m. to 10 p.m.) per day plus ten times the number of nighttime events (10 p.m. to 7 a.m.) per day, and 49.4 is ten times the logarithm of the number of seconds per day.

Based upon the noise level measurement data shown in Table 6-3, SEL values and resulting distances to the 60 and 65 dB L_{dn} contours associated with train operations will vary throughout the county. The variations in noise levels associated with train activities can be attributed to the speed of the train; presence of a steep grade; presence of intervening topography; and the use of warning horns. For the purposes of the *General Plan* update, it is useful, however, to estimate generalized distances to the 60 and 65 dB L_{dn} noise contours for the SPRR and UPRR tracks. Table 6-4 shows the generalized distances to the noise contours associated with railroad operations within Yuba County. Figures 1 through 6, included in Appendix B, show the locations of the 60 dB L_{dn} railroad noise contours. The noise contour locations do not account for use of warning horns.

TABLE 6-4
APPROXIMATE DISTANCE TO RAILROAD NOISE CONTOURS
Yuba County

Railroad Track	L_{dn} , dB, at 100' From Track C.L.	Distance to L_{dn} Contour (feet)	
		60 dB	65 dB
SPRR	68.3	358	166
UPRR	66.4	267	124

Source: Brown Buntin Associates, August 1992.



6.5 EXISTING FIXED NOISE SOURCES

The production of noise is a result of many industrial processes, even when the best available noise control technology is applied. Noise exposures within industrial facilities are controlled by federal and State employee health and safety regulations (OSHA and Cal-OSHA), but exterior noise levels may exceed locally acceptable standards. Commercial, recreational and public service facility activities can also produce noise which affects adjacent sensitive land uses. These noise sources can be continuous and may contain tonal components which may be annoying to individuals who live in the nearby vicinity. In addition, noise generation from fixed noise sources may vary based upon climatic conditions, time of day and existing ambient noise levels.

From a land use planning perspective, fixed-source noise control issues focus upon two goals: to prevent the introduction of new noise-producing uses in noise-sensitive areas, and to prevent encroachment of noise-sensitive uses upon existing noise-producing facilities.

There are numerous fixed noise sources which are dispersed throughout Yuba County. Existing fixed noise sources identified by the Yuba County staff include the cogeneration plant south of Olivehurst (Sithe Energies); the racetrack north of Linda; and various mining activities along the Yuba River near Smartville. Additional noise sources may include shooting ranges, concrete batch plants, county corporation yards, etc. However, a detailed list of noise producing facilities has not been developed by Yuba County.

The following is a general discussion of potential noise impacts associated with various fixed noise sources within Yuba County:

Cogeneration Plants

Typical noise sources associated with the operation of cogeneration plants include cooling towers, ash processing equipment, incinerators, boilers, turbine generators, compressors, pumps, conveyors, fans and other related equipment. File data for the Honey Lake cogeneration plant in Lassen County indicate that hourly noise levels can range between 62 and 66 dB L_{eq} , and maximum noise levels can range between 70 and 76 dB, at a distance of 500 feet.



Additional file data for the Ultrapower wood waste power plant in Rocklin indicate that the worst case continuous noise level from boilers was 75 dB at a distance of 185 feet. The location of the 50 dB L_{eq} noise level contour was approximately 3,000 feet from the plant.

Race Tracks

A race track is located north of the town of Linda. Noise level data has not been collected for the racetrack. However, file data for the race track at the Placer County Fair Grounds in the City of Roseville indicates a worst case hourly noise level of 66 dB L_{eq} at a distance of 500 feet. The noise level data were collected during a typical stock car race.

File data for the Nevada County fair grounds race track indicate that maximum noise levels range between 88 and 100 dB at a distance of 100 feet.

Mining Operations

Current mining operations occur along the Yuba River in the eastern portion of Yuba County. These operations include mining of rock, sand/gravel, and gold. Mining operations generally consist of harvesting material, crushing and screening of material, heavy machinery moving material on the site, conveyor systems, and the transport of the material in heavy trucks.

File data on mining operations indicate that maximum noise levels from nearby equipment operating on site range from 82 to 87 dB at a distance of 50 feet. Material processing operations which include the use of aggregate screens, jaw crushers and cone crushers have maximum noise levels of 83 to 87 dB at a distance of 50 feet. Material harvesting may consist of drilling into rock formations where explosive charges are placed, blasting the large formations of rock and then moving the material with heavy equipment.

Drilling rig noise levels generally range between 80 and 90 dB at a distance of 50 feet, and occur periodically. Blasting noise levels vary depending on the size of the charge, time delay for multiple charges, and depth at which the explosive charge is set. Noise levels from explosive charges are generally expressed in terms of "peak air overpressure." They are measured with a sound level meter set to the "peak" response setting, with linear frequency response. Peak levels from blasting are instantaneous in nature, with the



majority of sound energy occurring at very low frequencies. The typical $L_{\max}$ noise levels do not correlate well with blasting noise. This is because "A-weighted" sound pressure levels, which account for how the human ear perceives a sound, discount low frequency sound. Limited file data indicate that A-weighted $L_{\max}$ sound levels produced by blasting are about 36 to 38 dB lower than peak linear overpressures.

Determining a typical hourly L_{eq} value for a typical mining operation is difficult, as the results are based upon variations in the size of an operation, type of equipment used, the effects of shielding from local topography, presence of drilling equipment, and general mitigation measures which may be contained in the harvest plan.

Information regarding the Ridgerock Quarry near Birchville in Nevada County indicates that an hourly L_{eq} value during typical operations would be approximately 86 dB at a distance of 50 feet, and an hourly L_{eq} of approximately 60 dB at 1,000 feet, without the benefit of shielding from local topography. In contrast, the Teichert Martis Valley mining operation in Nevada County is estimated to have an average hourly L_{eq} value of about 90 dB at a distance of 50 feet, and an hourly L_{eq} of approximately 64 dB at 1,000 feet without the benefit of shielding from local topography. The difference in noise levels indicates that the Teichert operation produces approximately 3 times the sound energy of the Ridgerock Quarry.

The multiple activities which occur at a mining operation may not occur continuously during any given hour. In the case of a small mining operation, load out activities or wheel loader operations may only occur for a period of 20 or 30 minutes during any given hour. Also, the various operations may not occur simultaneously. Therefore, the noise level data shown above, which may represent only 5 to 30 minutes of an hour, would not reflect actual hourly L_{eq} values associated with every mining operation.

Shooting Ranges

Yuba County has a trap shooting club east of Linda along Hammonton Smartville Road. Noise associated with trap shooting is repetitive loud impulsive sounds of short duration. Noise measurement data indicate that the peak noise level from a 12 gauge shotgun is about 97 dB at a distance of 50 feet.



Concrete Batch Plants

Concrete batch plants and asphalt plants are typical noise sources located within county jurisdictions. Noise levels from operations of this nature can also be considered incompatible with sensitive land uses. Typical operations associated with a batch plant include the arrival and departure of concrete mixing trucks and sand and gravel delivery trucks, loading of the mixing trucks with sand and gravel, stockpiling sand and gravel with front-end loaders, conveyor systems and truck wash down areas. Maximum noise levels are generally associated with backup warning bells and vibration shakers on the batch plant. To quantify noise levels associated with these types of operations, previously collected noise level data for concrete batch plant operations has been used.

The arrival and departure of concrete mixing trucks generated average noise levels of 71.5 dB at 45 feet, and sand and gravel trucks produced average noise levels of 91 dB at 35 feet. Batch plant operations produced average noise levels of 87 dB at a distance of 40 feet. Load trucks with sand and gravel, and front-end loaders which stockpile sand and gravel and load conveyor systems, produce average noise levels of 89 dB at a distance of 35 feet. Mixing trucks in wash-down areas produce noise levels of approximately 85 dB at 30 feet for a brief period prior to exiting the yard.

Landfill and Refuse Transfer Station Facilities

The primary landfill operation in Yuba County (YSDI facility) is located in northeast Marysville. A future landfill is to be located south of Beale AFB (Ostrom Road site). The YSDI facility will become a transfer station and will continue as a recycling facility after the Ostrom Road site is opened. See Sections 13.2 and 18.1 for a more complete discussion of landfills in Yuba County.

Noise producing equipment at landfills include bulldozers, compactors, and scrapers. Truck traffic to and from the facility, compost chipping and metal baling can also contribute to the ambient noise environment in the vicinity of landfills. Based upon file data for the Placer County landfill, maximum noise levels associated with the operation of heavy equipment at landfills can range between 76 and 86 dB at a distance of 50 feet. L_{eq} values can be expected to



range between 75 and 80 dB at a distance of 100 feet, without the benefit of shielding from local topography.

6.6 EXISTING AIRCRAFT NOISE

Airports and airfields in Yuba County include Beale Air Force Base (AFB), the Yuba County Airport and the Brownsville Aero Pines Airport.

Beale AFB

Beale AFB is a Strategic Air Command (SAC) facility which is located within Yuba County, and could be considered a major noise source within the county. The most recent noise contours which were prepared for Beale AFB are contained in the June 1987 Beale AFB Comprehensive Land Use Plan (CLUP). The locations of the existing 60, 65 and 70 CNEL contours are shown on Figure 12 included in Appendix B.

The noise contours developed for the CLUP may not accurately reflect existing noise levels due to aircraft operations at Beale AFB. Based upon previous discussions with Beale AFB personnel, the existing CLUP noise contours include aircraft operations such as the SR-71 Blackbird operations, which no longer operate at the facility.

Yuba County Airport

The Yuba County Airport is located south of the City of Marysville, near the community of Olivehurst. The airport is a general aviation public use airport. The airport has two runways with headings of 05/23 and 14/32. Based upon the 1990 *California Aviation System Plan* (CASP), there are approximately 117 based aircraft at the Yuba County Airport, with a total of 58,000 annual operations. The CASP states that the based aircraft include 86 single engine, 18 multi-engine, 12 jet and 1 rotorcraft aircraft.

There is no adopted CLUP or noise contours for the Yuba County Airport; a draft CLUP has been completed that will be considered for adoption in late May 1994. The land use compatibility guidelines for noise established in the *ALUC Policy Plan* apply to the Yuba County Airport; these guidelines are in the process of being revised. The most recent noise level contours for the airport were developed in 1986 for the *Yuba County Airport Master Plan*. The



noise contours were developed for projected future scenarios of 130,000 and 200,000 annual operations. Figures 13 and 14, included in Appendix B, show the locations of the future noise contours as described in the Master Plan. These contours will be updated in the CLUP.

Brownsville Aero Pines Airport

The Brownsville Aero Pines Airport is located in the northeast portion of Yuba County near the community of Brownsville. The airport is a basic utility general aviation airport. The airport has one runway with a heading of 06/24. Based upon the 1990 *California Aviation System Plan* (CASP), there are approximately 41 based aircraft at the Brownsville Aero Pines Airport, with a total of 8,000 annual operations. The CASP states that the based aircraft include 39 single engine, 1 multi-engine and 1 other type of aircraft.

In 1990 a *Comprehensive Land Use Plan* (CLUP) was prepared for Brownsville Aero Pines Airport by the Sacramento Area Council of Governments (SACOG), which is the designated Airport Land Use Commission (ALUC). The CLUP states that to date no noise contours exist for the Brownsville Aero Pines Airport. However, the CLUP does recognize that noise levels associated with operations at the airport could be intrusive. Therefore, the CLUP recommends the following:

In the event that airport operations exceed 15,000 annual takeoffs and landings for two years in a row, it is recommended that Yuba County conduct a noise study to determine the location of the 65 dB CNEL contour. Future residential development within the established 65 dB CNEL contour should then be subject to the requirement that all habitable rooms be designed to limit interior noise to 45 dB CNEL, with windows closed.



SECTION SEVEN LIGHT AND GLARE



SECTION SEVEN LIGHT AND GLARE

7.1 SOURCES OF LIGHT AND GLARE

The primary sources of light in Yuba County include headlights on the roadway system, particularly main routes, such as State Routes 20, 70, and 65; Beale Air Force Base; the Yuba County Airport; the Sithe Energies cogeneration facility on Feather River Boulevard; commercial locations; the YSDI Landfill; and large industrial facilities, such as the lumber mill in the Ostrom Road area. High school football stadiums emit strong light during games, but the effect is somewhat mitigated by the relatively short duration and intermittent nature of such events, which are generally limited to about six to eight per year. Cities and communities emit a low-level ambient glow that is visible for many miles on dark nights. Yuba College has nighttime security lighting on-campus, but the lighting is not particularly intense, and the campus is surrounded by residential development with street lighting. Thus, campus lighting tends to merge with the general low-level glow emitted by surrounding development. Scattered throughout the county are microwave towers and other communications facilities and transmission line towers that have either red lights or powerful, often rotating or flashing lights to warn low-flying aircraft. One such facility, a microwave tower along State Route 65 between Wheatland and Olivehurst, has a rotating light with an intense blue-white beam. There are few residences within a two-mile radius of the tower, but the beam is visible for many miles.

7.2 PLANNING FOR LIGHT AND GLARE

Strong sources of light and glare can create a significant nuisance effect on sensitive receptors, particularly residences and stationary populations, such as hospitals and rest homes. Rural residents, who seek the quiet and relative seclusion of the foothill and mountain communities, and who value the historical ambience of the Yuba County gold country, are particularly sensitive to the effects of strong light sources.

The nuisance effect of strong lighting must be weighed against the beneficial, often essential uses of such lighting. These beneficial uses include nighttime security



SECTION EIGHT EXISTING LAND USE

8.1 DISTRIBUTION OF LAND USES

The predominant land uses in Yuba County are agriculture, forested lands, open space/grazing lands, and military installation (Beale AFB). Land used for farming and grazing purposes totals nearly 278,943 acres, of which approximately 198,000 is grazing land in the foothill areas, and 80,943 is farming, predominantly on the Valley floor. The mountainous area is primarily forest land, including approximately 35,506 acres within the Plumas National Forest and 20,494 acres within the Tahoe National Forest. Generalized land use for Yuba County is depicted on Figure 8-1 (inserted separately in back of document).

The two incorporated cities in Yuba County, Marysville and Wheatland, are located on the Valley floor. The unincorporated communities of Linda and Olivehurst, combined with the two cities, represent the predominant urbanized areas of the county.

Land use information has been compiled for the unincorporated communities of Browns Valley, Brownsville, Camptonville, Challenge, Dobbins, Linda, Log Cabin, Loma Rica, Olivehurst, Oregon House, Rackerby, Smartville, Strawberry Valley, and the unincorporated areas surrounding the cities of Marysville and Wheatland. Information was obtained from County records and a field survey conducted in July and August, 1992. Land use in each of these communities is summarized below.

Housing unit counts differ from those reported in Section 10.0. The figures in Section 10.0 were U.S. Census counts taken in April 1990, while the land use survey was conducted in July-August 1992. The community boundaries used by the census were also different than the survey area boundaries, which were based on County-defined study areas.

Browns Valley

The community of Browns Valley is located between State Route 20 and a point approximately one-half mile past Everglade Trail along both sides of Marysville Road and Browns Valley School Road (Figure 8-2). Land use is



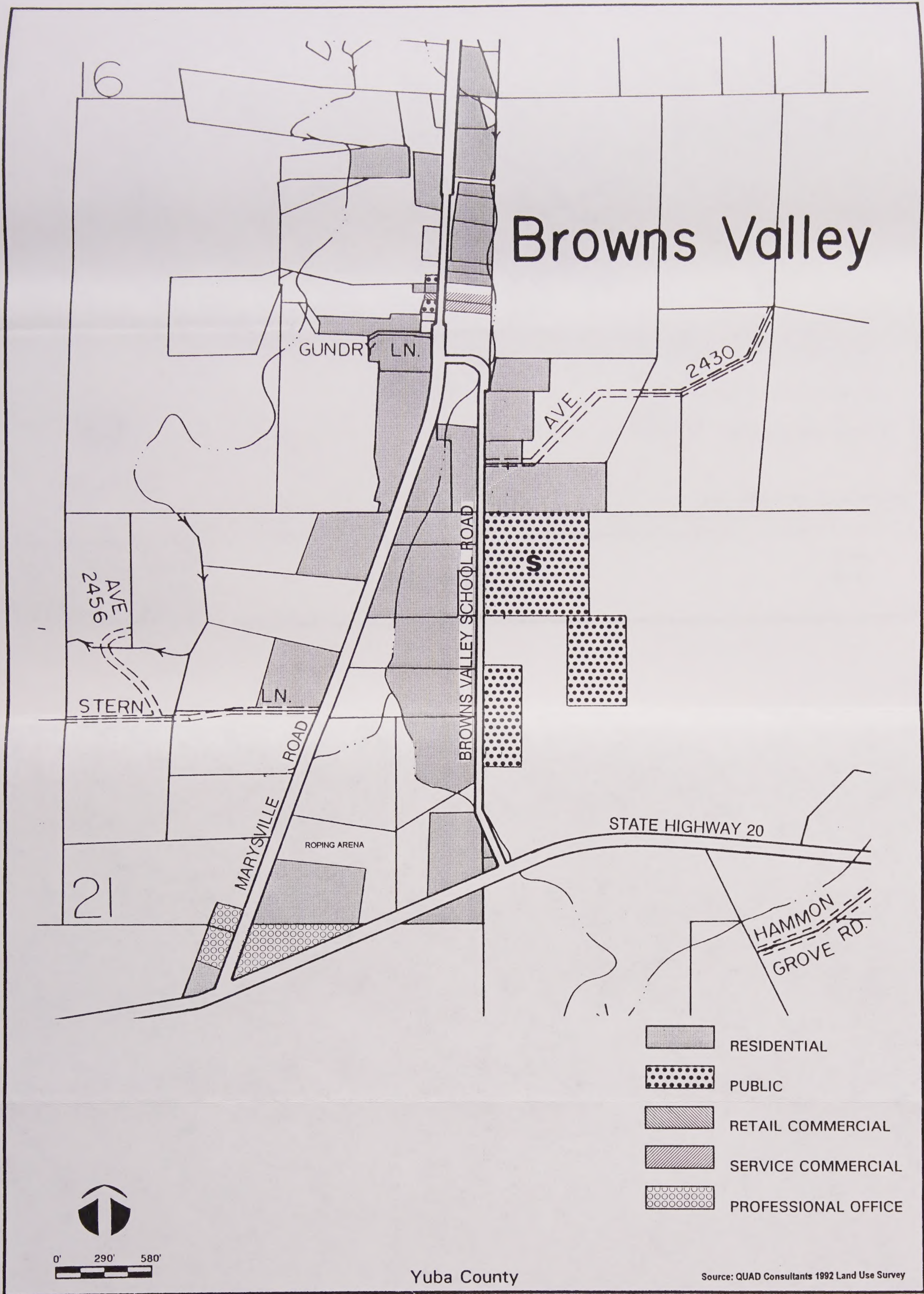
primarily residential (36 single family dwellings and 15 mobilehomes) and there is a general store, a bar, professional offices, a park, an elementary school, and a cemetery in Browns Valley (Table 8-1).

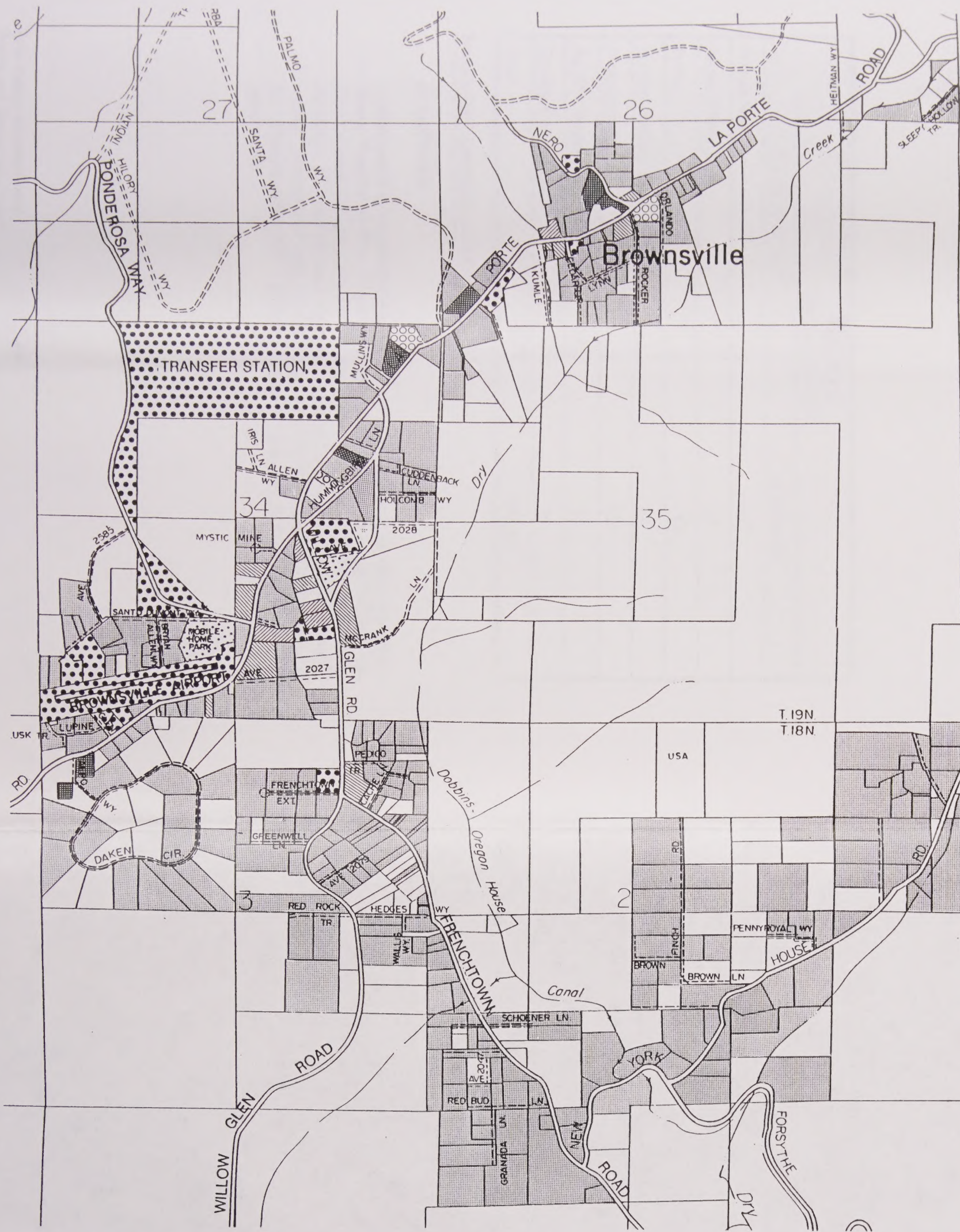
TABLE 8-1 BROWNS VALLEY	
LAND USE	ACREAGE
Residential	73.5
Public	17
Private Institutional	5
Service Commercial	.69
Retail Commercial	.12
Total	96.31

Source: QUAD Consultants Land Use Survey, 1992.

Brownsville

Brownsville is located generally along La Porte Road, Glen Road, Frenchtown Road and New York House Road in northeastern Yuba County (Figure 8-3). Land use in Brownsville is residential (229 single family dwellings, 122 mobilehomes and 2 mobilehome parks), and also includes a community center (including a fire station and Sheriff's substation), post office, offices, a variety of commercial uses, churches, a cemetery, a solid waste transfer station, the Brownsville Aero Pines Airport, and a park and senior center (Table 8-2).





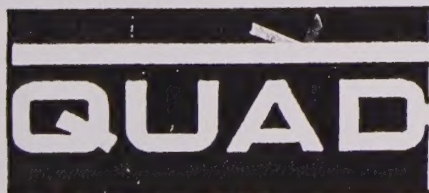
- | | | | |
|--|------------------|--|-----------------------|
| | RESIDENTIAL | | PRIVATE INSTITUTIONAL |
| | MOBILE HOME PARK | | RETAIL COMMERCIAL |
| | PUBLIC | | SERVICE COMMERCIAL |
| | | | PROFESSIONAL OFFICE |



0' 754' 1508'

Yuba County

Source: QUAD Consultants 1992 Land Use Survey



Existing Land Use
BROWNSVILLE



**TABLE 8-2
BROWNSVILLE**

LAND USE	ACREAGE
Residential	763
Mobilehome Park	13
Public	152
Private Institutional	12
Professional	12.5
Retail Commercial	10
Service Commercial	6
Total	968.5

Source: QUAD Consultants Land Use Survey, 1992.

Camptonville

Camptonville is located generally southeast of State Route 49 along Mountain House Road and Pike Road in eastern Yuba County near the border with Sierra County (Figure 8-4). Land uses consist of residential (48 single family dwellings, 14 mobilehomes and 2 mobilehome parks), a post office, cemetery, various commercial uses, churches, and an abandoned lumber mill (Table 8-3). Camptonville CSD provides water service and fire protection in the community.



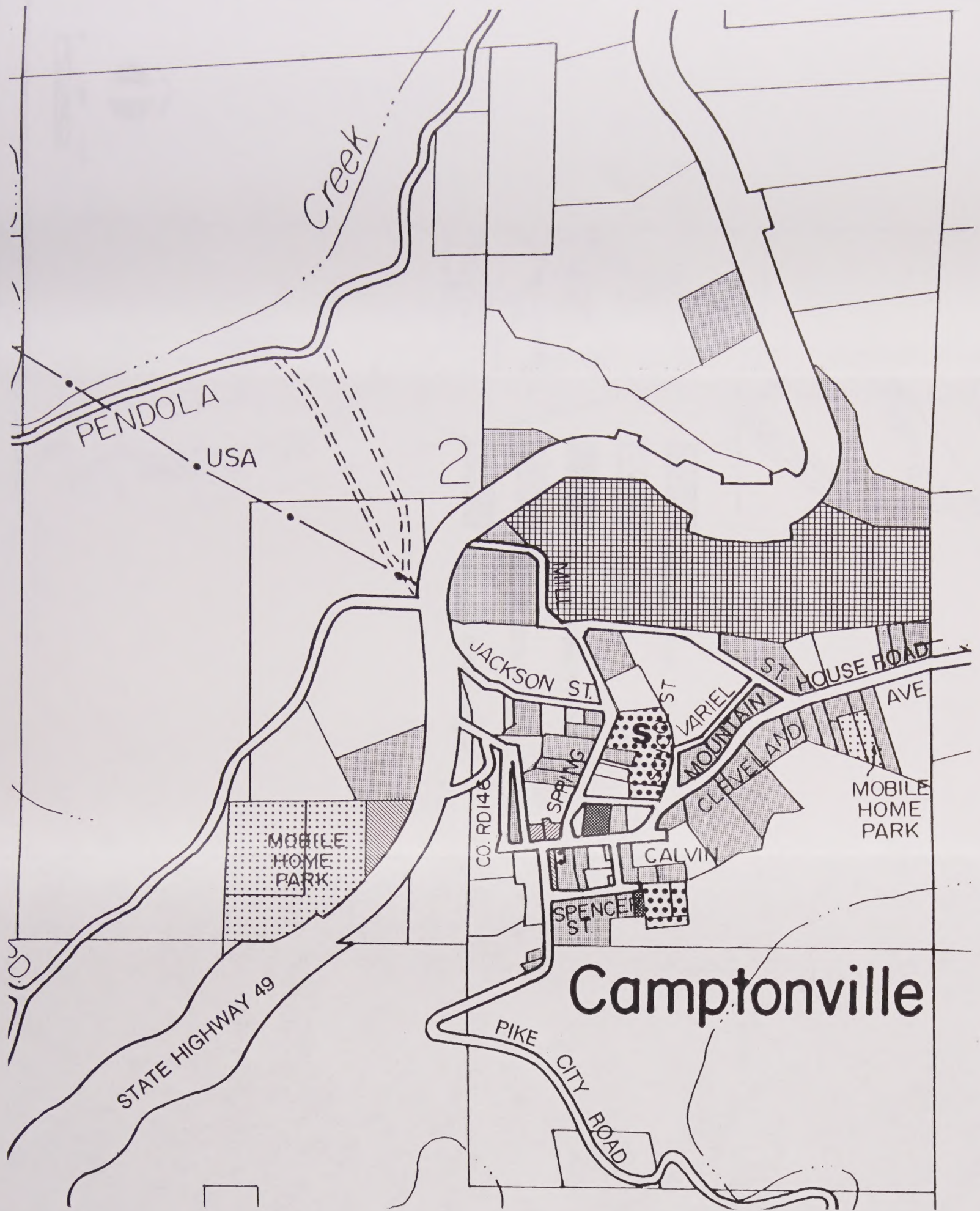
**TABLE 8-3
CAMPTONVILLE**

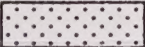
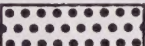
LAND USE	ACREAGE
Residential	38
Industrial	34
Private Institutional	2
Public	5
Service Commercial	.5
Retail Commercial	2
Mobilehome Park	15.4
Total	96.9

Source: QUAD Consultants Land Use Survey, 1992.

Challenge

Challenge is located along both sides of La Porte Road near Oregon Hill Road northeast of Brownsville (Figure 8-5). Land uses consist of residential (115 single family dwellings and 17 mobilehomes), an elementary school, post office, churches and offices, various commercial uses and an electrical substation (Table 8-4).

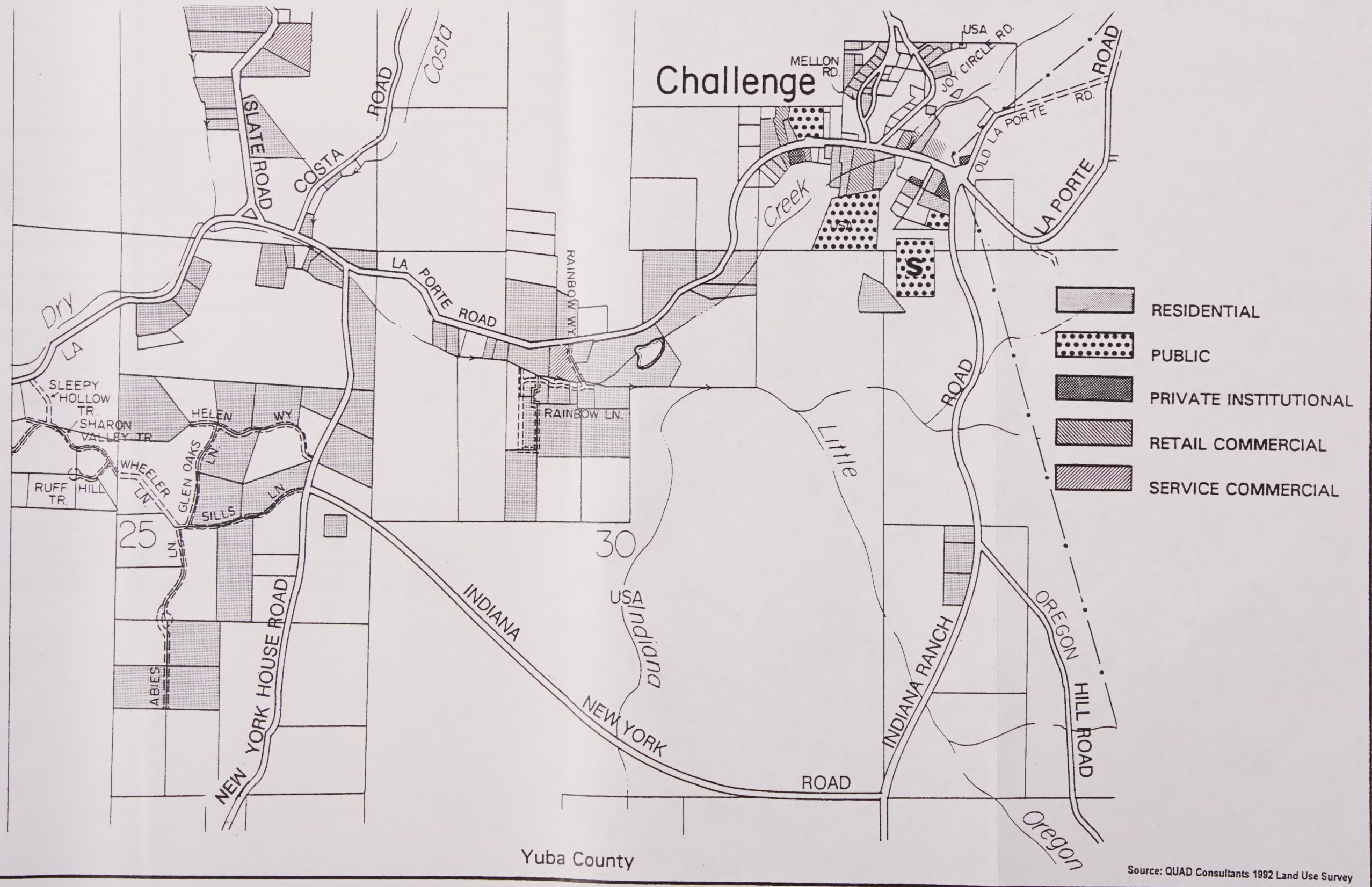


- | | | | |
|---|------------------|---|-----------------------|
|  | RESIDENTIAL |  | PRIVATE INSTITUTIONAL |
|  | MOBILE HOME PARK |  | RETAIL COMMERCIAL |
|  | PUBLIC |  | SERVICE COMMERCIAL |
| | |  | INDUSTRIAL |



Yuba County

Source: QUAD Consultants 1992 Land Use Survey





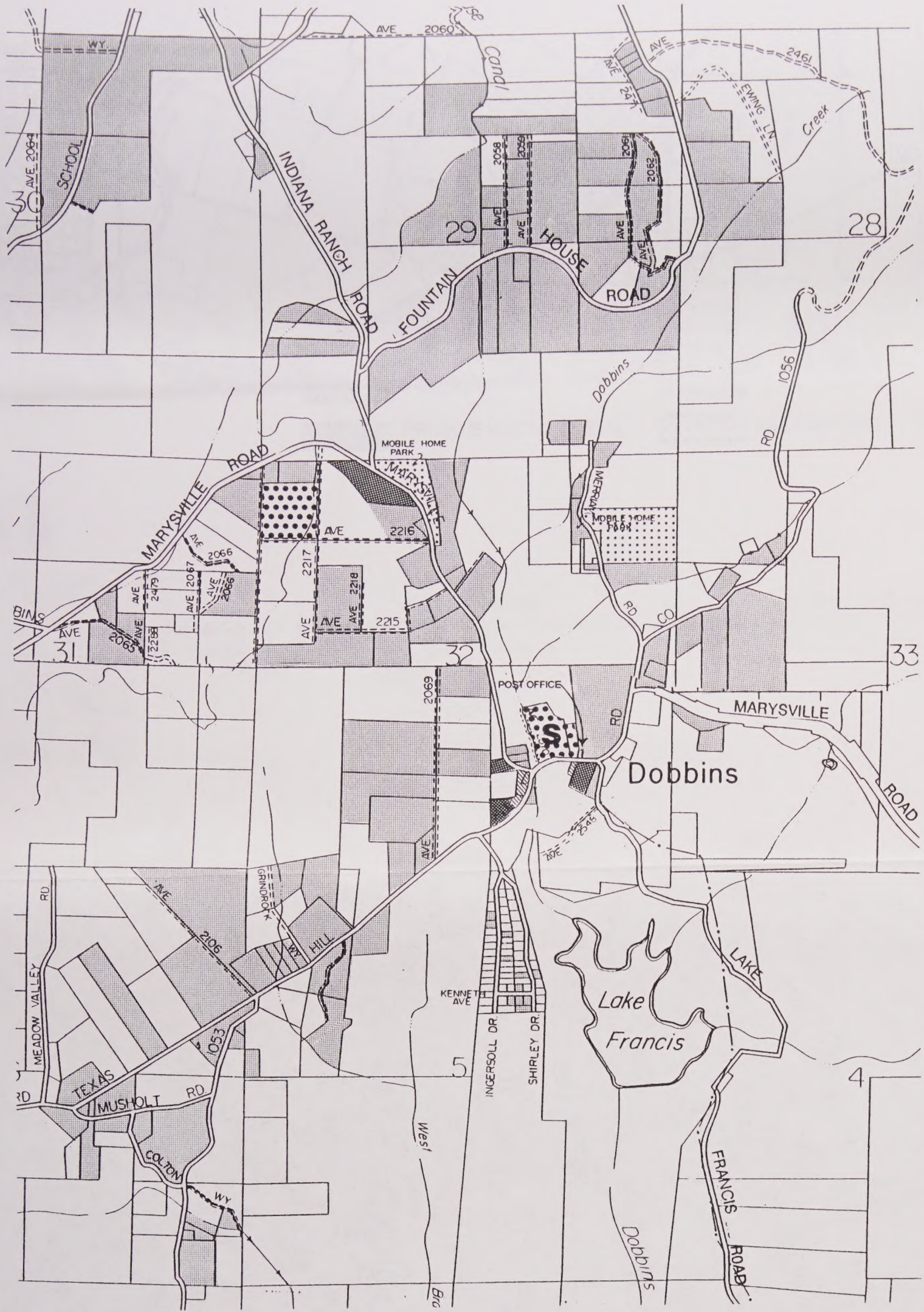
**TABLE 8-5
DOBBINS**

LAND USE	ACREAGE
Residential	653
Mobilehome Park	23
Private Institutional	8
Public	22
Retail Commercial	2
Total	708

Source: QUAD Consultants Land Use Survey, 1992.

Linda

Linda is a full-service urban community with residential, commercial, industrial, public and open space uses located southeast of Marysville on both sides of State Route 70 (Figure 8-7). Residential uses consist of 2,346 single family dwellings, 1,163 multiple family dwellings, and 158 individual mobilehomes, as well as four mobilehome parks. A variety of commercial uses are located primarily along North Beale Road. Yuba College and three schools (two elementary schools and one middle school) are also located in the community, as well as five parks, twelve churches, a golf course, and a fire station (Table 8-6). Sewer and water service and some park maintenance are provided by the Linda County Water District. The Linda Fire District provides fire protection for the community.



RESIDENTIAL



PUBLIC



MOBILE HOME PARK



PRIVATE INSTITUTIONAL



RETAIL COMMERCIAL



0' 727' 1454'



Yuba County

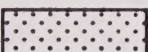
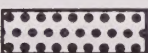
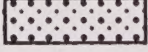
Source: QUAD Consultants 1992 Land Use Survey

QUAD

Existing Land Use
DOBBINS

FIGURE
8-6



- | | | | |
|---|-----------------------|---|--------------------|
|  | RESIDENTIAL |  | RETAIL COMMERCIAL |
|  | MOBILE HOME PARK |  | SERVICE COMMERCIAL |
|  | PUBLIC |  | INDUSTRIAL |
|  | PRIVATE INSTITUTIONAL |  | RECREATION |



0' 1600' 3200'

Yuba County

Source: QUAD Consultants 1992 Land Use Survey

QUAD

Existing Land Use
LINDA

FIGURE
8-7



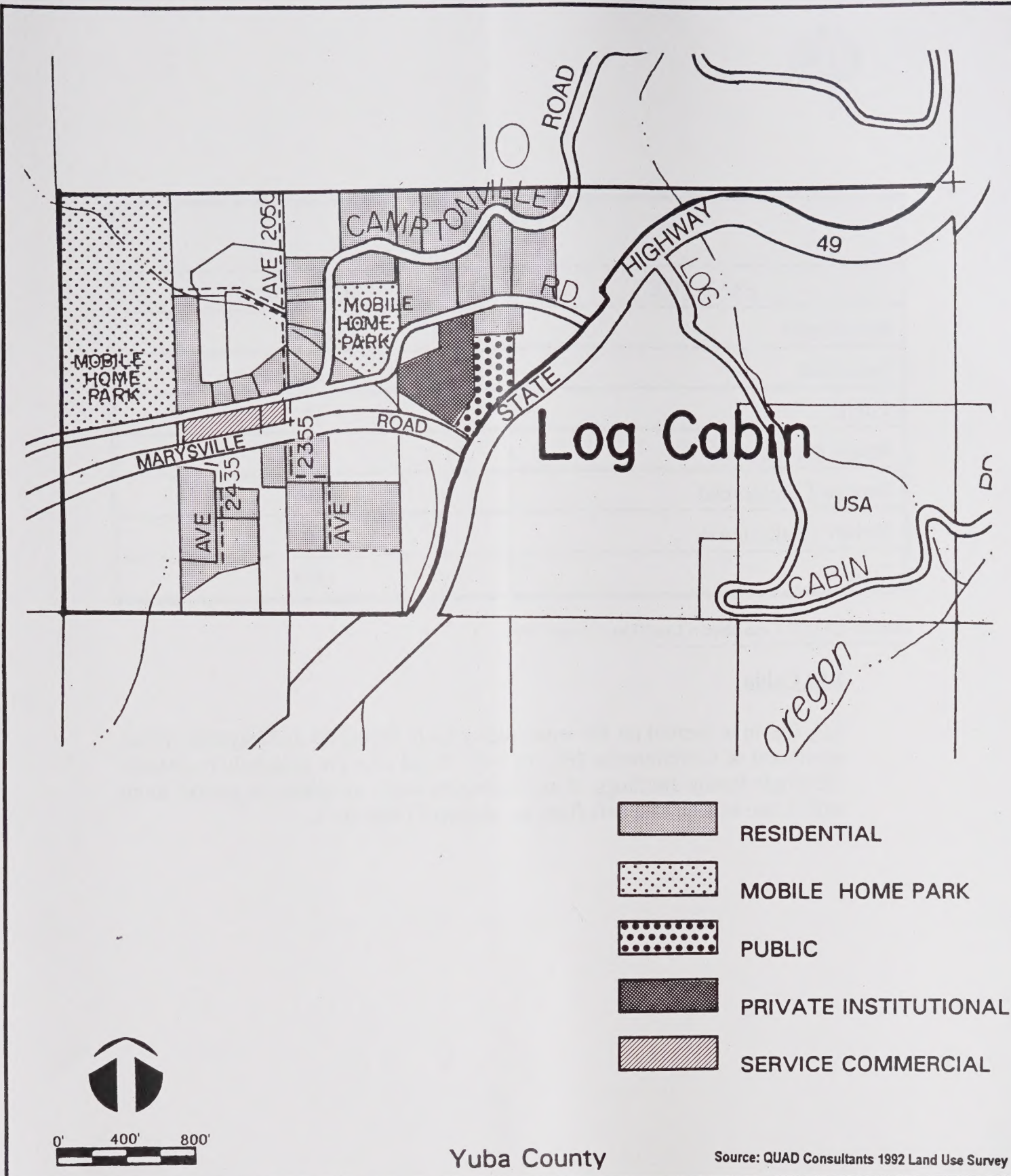
**TABLE 8-6
LINDA**

LAND USE	ACREAGE
Residential	1660
Industrial	63
Public	14
Retail Commercial	70
Service Commercial	106
Private Institutional	20
Total	1933

Source: QUAD Consultants Land Use Survey, 1992.

Log Cabin

Log Cabin is located on the west side of State Route 49 at Marysville Road, southwest of Camptonville (Figure 8-8). Land uses are primarily residential (25 single family dwellings, 11 mobilehomes and 2 mobilehome parks), along with a fire station and cafe/bar/gas station (Table 8-7).





**TABLE 8-7
LOG CABIN**

LAND USE	ACREAGE
Residential	46
Mobilehome Park	26
Service Commercial	2.06
Private Institutional	4
Public	2.2
Total	80.26

Source: QUAD Consultants Land Use Survey, 1992.

Loma Rica

Located north and south of Loma Rica Road in north central Yuba County, other major roads through Loma Rica include Fruitland Road, Loop Road, Krosens Road and Virginia Road (Figure 8-9). Land use is primarily residential (390 single family dwellings and 68 mobilehomes) but also includes a fire station, County corporation yard, County schools office, mixed commercial and office uses, an elementary school, intermediate school and a special education facility (Table 8-8).



**TABLE 8-8
LOMA RICA**

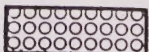
LAND USE	ACREAGE
Residential	1521
Professional	3
Private Institutional	10
Retail Commercial	11
Service Commercial	15
Public	35
Total	1595

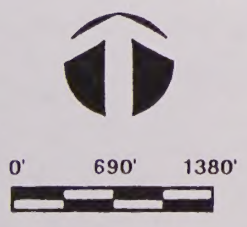
Source: QUAD Consultants Land Use Survey, 1992.

Olivehurst

Olivehurst is also a full-service urban community located west of State Route 65 and southwest of Linda (Figure 8-10). Residential uses include 2,260 single family dwellings, 366 multiple family dwellings, 177 individual mobilehomes and 2 mobilehome parks. A variety of commercial uses are located primarily along Olivehurst Avenue. The Yuba County Airport and Airport Industrial Parks are located in the southwestern portion of the community. Five schools are located in the community (three elementary, one middle school and one high school), four parks, 15 churches, a post office, and a fire station (Table 8-9). The Olivehurst Public Utilities District (OPUD) provides sewer and water service, fire protection, parks and recreation services, and street lighting.



-  RESIDENTIAL
-  PUBLIC
-  PRIVATE INSTITUTIONAL
-  RETAIL COMMERCIAL
-  SERVICE COMMERCIAL
-  PROFESSIONAL OFFICE

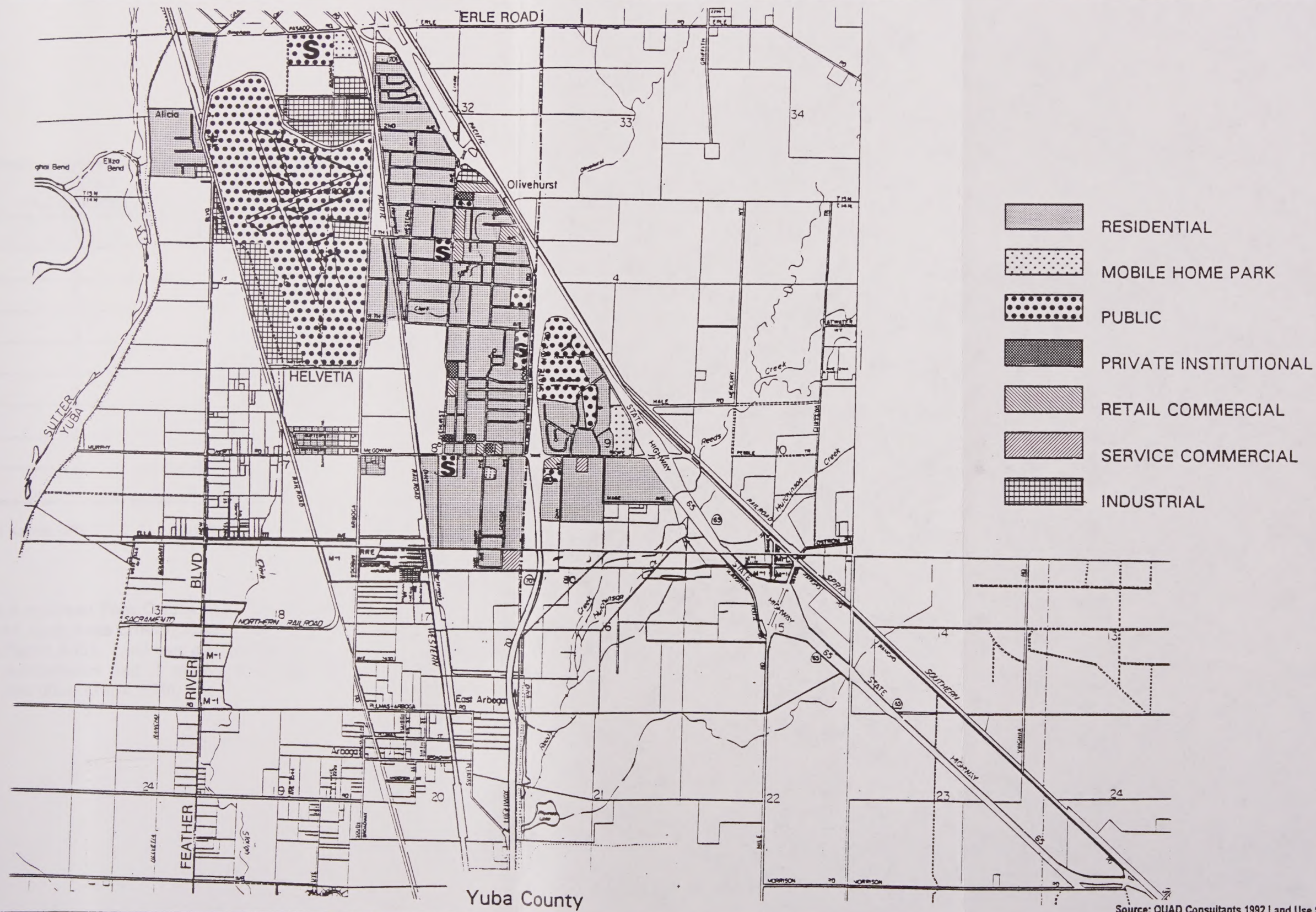


Yuba County

Source: QUAD Consultants 1992 Land Use Survey



Existing Land Use
LOMA RICA





**TABLE 8-9
OLIVEHURST**

LAND USE	ACREAGE
Residential	1082
Mobilehome Park	32
Retail Commercial	52
Service Commercial	12
Industrial	62
Private Institutional	15
Public	936
Total	2191

Source: QUAD Consultants Land Use Survey, 1992.

Oregon House

Oregon House is located in northeast Yuba County, west of Dobbins and east of Merle Collins Reservoir, along Rices Crossing Road, Marysville Road and Rices Texas Hill Road (Figure 8-11). Land uses are residential (266 single family dwellings, 149 mobilehomes and 2 mobilehome parks), mixed commercial uses, and a post office (Table 8-10).



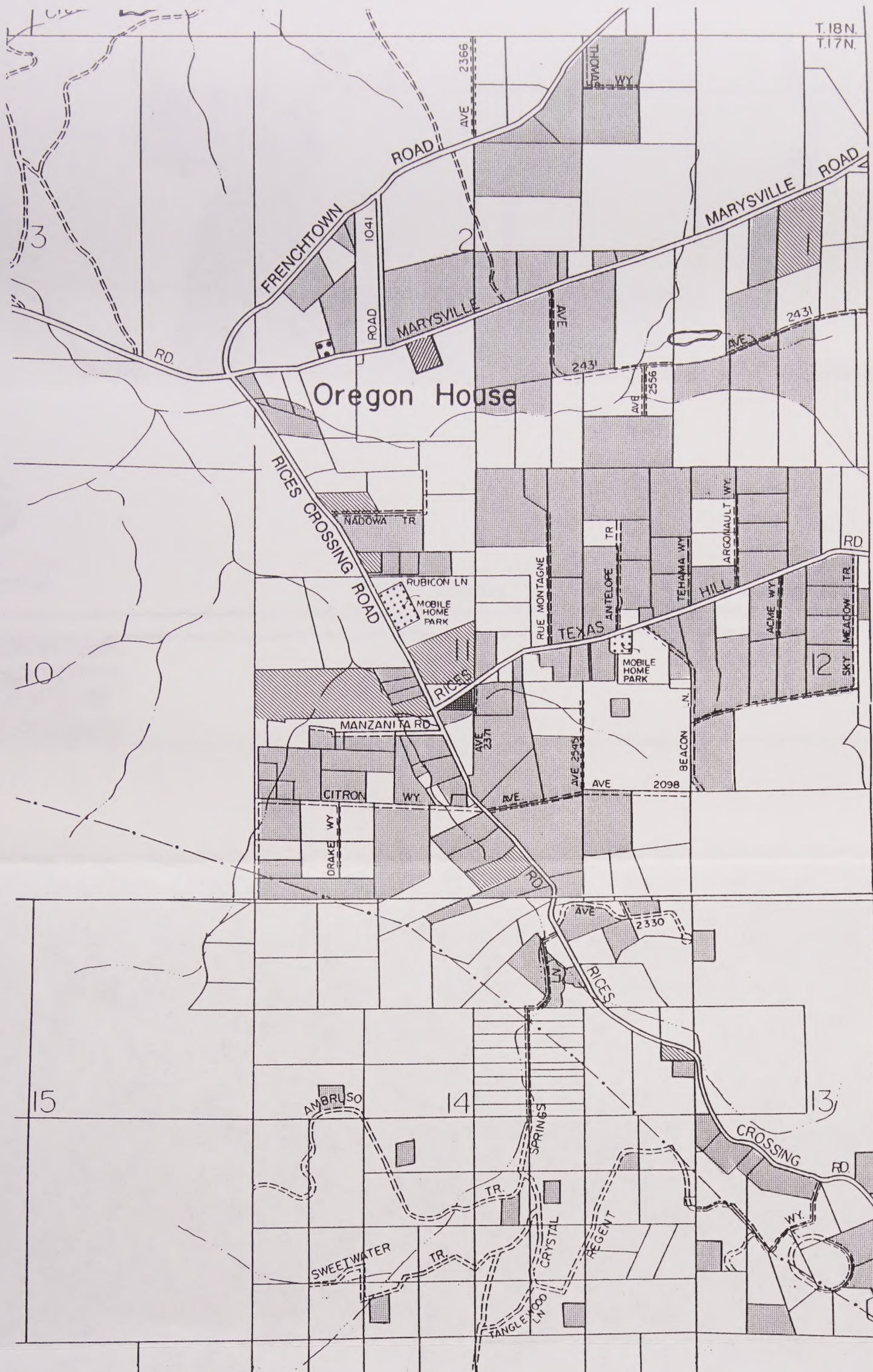
**TABLE 8-10
OREGON HOUSE**

LAND USE	ACREAGE
Residential	648
Retail Commercial	25
Private Institutional	1
Mobilehome Park	2
Public	1
Total	677

Source: QUAD Consultants Land Use Survey, 1992.

Rackerby

Located in northeast Yuba County near the Butte County border, Rackerby is situated along Vierra Road and La Porte Road (Figure 8-12). Land use is primarily residential (34 single family dwellings and 23 mobilehomes), along with a post office, bar and church (Table 8-11).



- | | | | |
|---|--------------------|---|-----------------------|
|  | RESIDENTIAL |  | PUBLIC |
|  | MOBILE HOME PARK |  | PRIVATE INSTITUTIONAL |
|  | SERVICE COMMERCIAL |  | RETAIL COMMERCIAL |



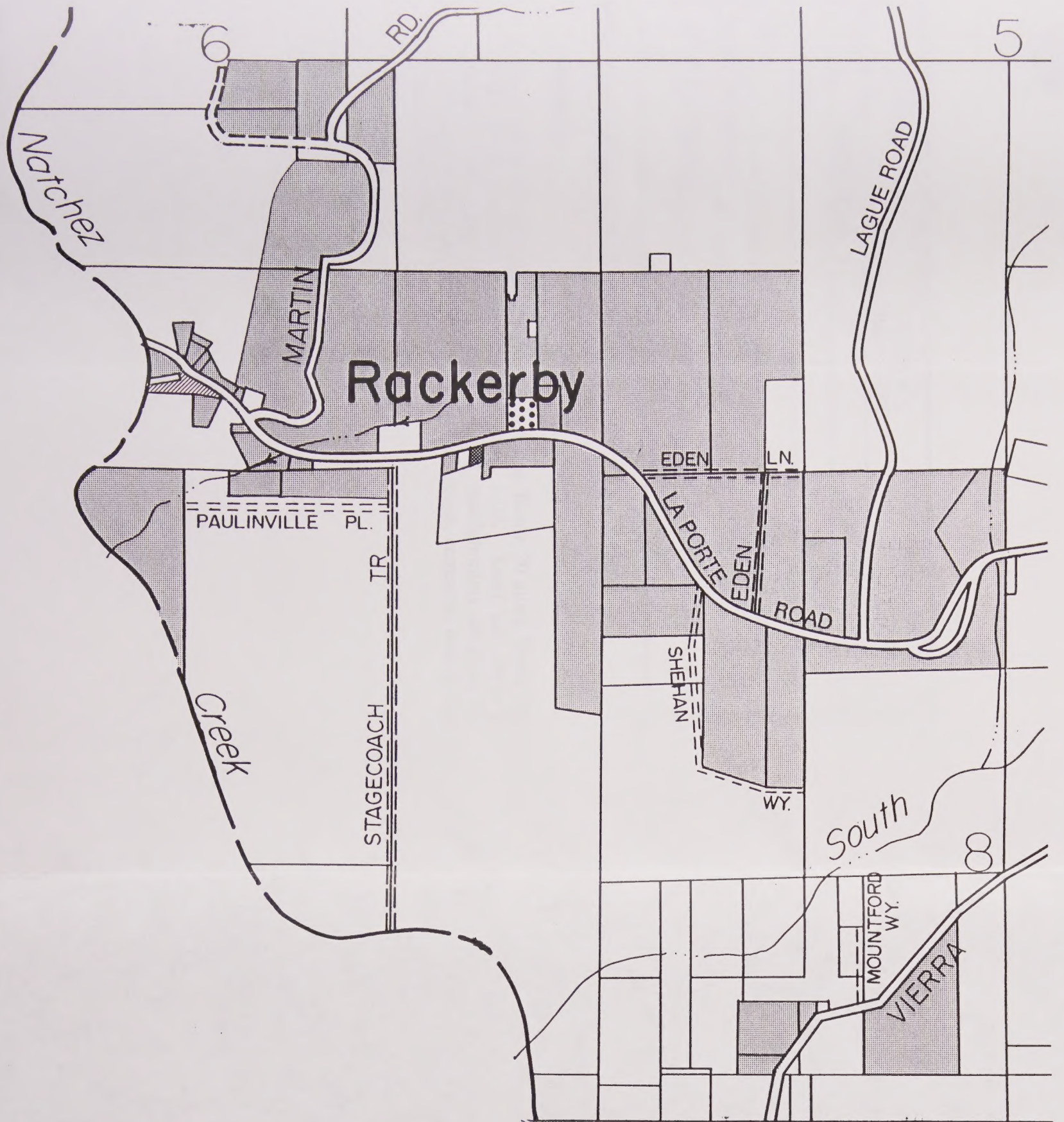
Yuba County

Source: QUAD Consultants 1992 Land Use Survey

QUAD

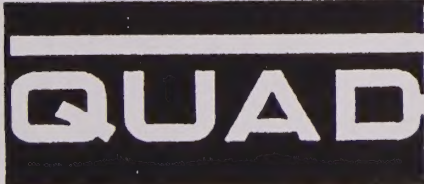
Existing Land Use
OREGON HOUSE

FIGURE
8-11



Yuba County

Source: QUAD Consultants 1992 Land Use Survey



Existing Land Use
RACKERBY



**TABLE 8-11
RACKERBY**

LAND USE	ACREAGE
Residential	238
Public	1
Private Institutional	.15
Service Commercial	2
Total	241.15

Source: QUAD Consultants Land Use Survey, 1992.

Smartville

Smartville is located on the north side of State Route 20 along Smartville Road in east central Yuba County (Figure 8-13). Land use includes residential (48 single family residential and 11 mobilehomes), an electrical substation, elementary school, post office, fire station, cemetery, church and a store (Table 8-12).



**TABLE 8-12
SMARTVILLE**

LAND USE	ACREAGE
Residential	43
Public	9
Private Institutional	1
Total	53

Source: QUAD Consultants Land Use Survey, 1992.

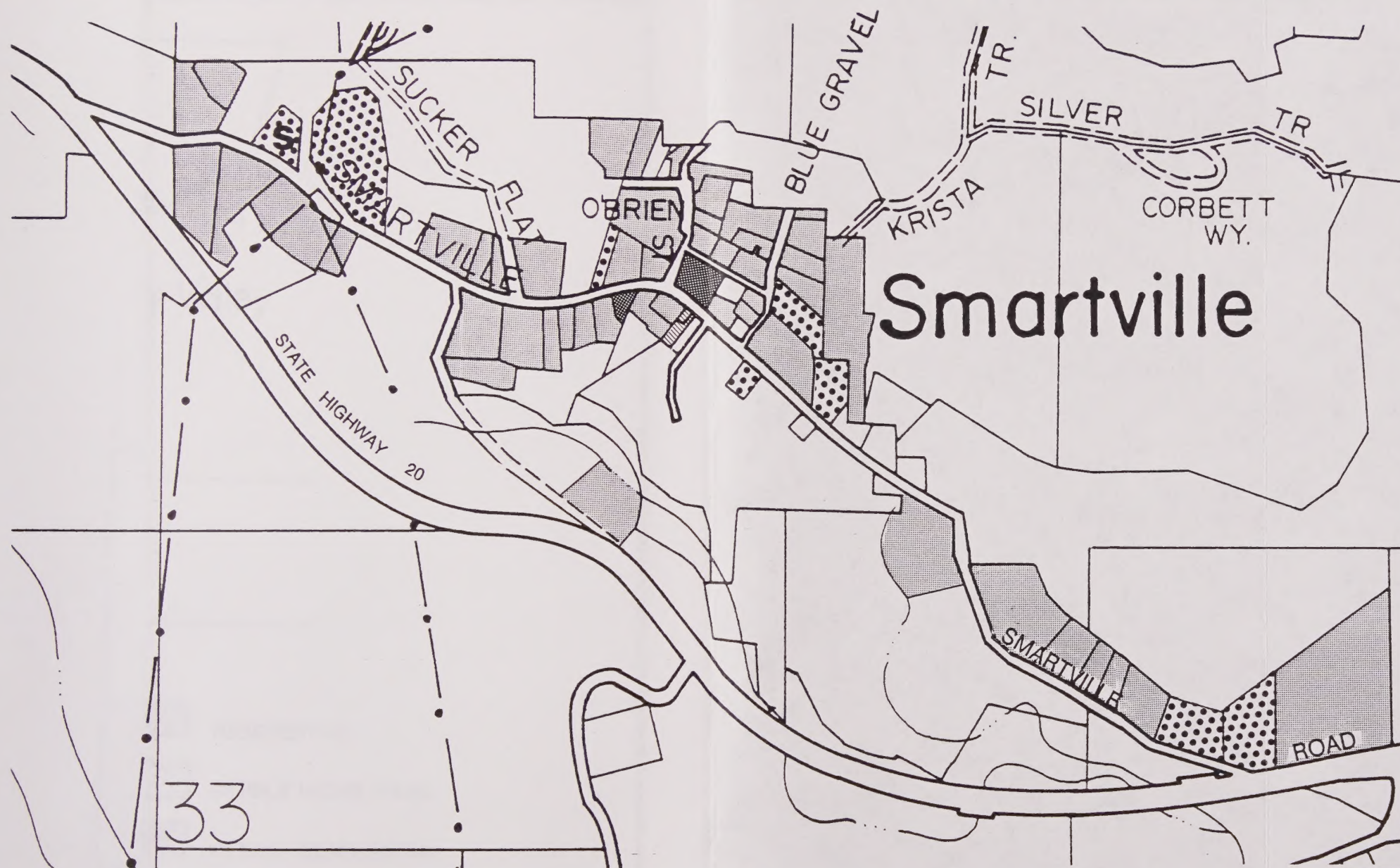
Strawberry Valley

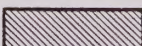
Strawberry Valley is located in northeastern Yuba County along La Porte Road near the Butte County boundary (Figure 8-14). Uses are primarily residential (16 single family residences and 2 mobilehomes) (Table 8-13). Adjacent to the community is a lumber mill.

**TABLE 8-13
STRAWBERRY VALLEY**

LAND USE	ACREAGE
Residential	41
Mobilehome Park	17
Industrial	20
Service Commercial	5
Retail Commercial	1.2
Total	84.2

Source: QUAD Consultants Land Use Survey, 1992.

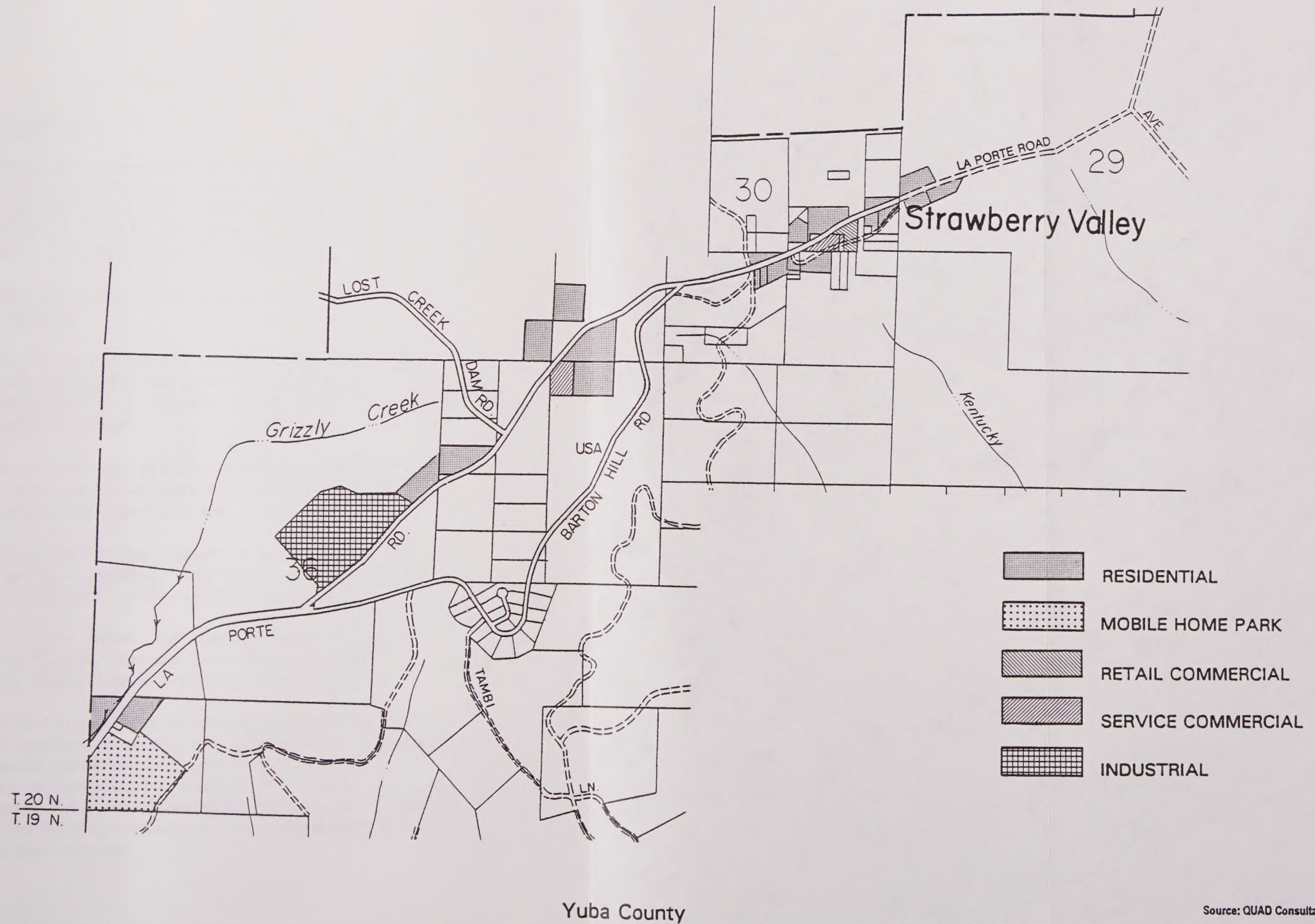


-  RESIDENTIAL
-  PUBLIC
-  PRIVATE INSTITUTIONAL
-  RETAIL COMMERCIAL



Yuba County

Source: QUAD Consultants 1992 Land Use Survey





8.1.1 Specific and Community Plans

A number of specific plans or community plans have been approved or are proposed for sites within the Yuba County unincorporated area (Figure 8-15). A specific plan, as provided in the California Government Code and the *State General Plan Guidelines*, is a tool for the systematic implementation of the County's *General Plan*, and consists of text and diagram that:

- Depict the distribution, location and extent of land uses within the area covered by the plan;
- Describe the proposed distribution, location, extent, and intensity of major components of public and private infrastructure (e.g. sewage, water, drainage, solid waste disposal, energy, transportation, and related systems and facilities);
- Establish standards and criteria for the progress of development of the plan area and for the conservation, development, and utilization of natural resources, where applicable; and
- Spell out an implementation program to carry out the goals and policies of the plan, including regulations, programs, public works projects, and potential financing strategies and measures.

A specific plan may also include any other subjects that are, in the determination of the County, necessary to facilitate implementation and administration of the *General Plan* as it affects the specific plan area.

Specific plans must be consistent with the applicable *General Plan* elements of the County. A required component of a specific plan is a statement documenting the precise relationship of the plan to the County's *General Plan*. Specific plans are a comparatively common tool among California communities for implementing general plan policies and programs, particularly in instances where the planning environment is unusually sensitive or where planning issues are more complex.

1

SPRING VALLEY
SOUTHPOINTE PARTNERS, 3,503 UNITS

2

SIERRA LAKES VILLAGE
WESTERN WORLD MINING COMPANY, 1,800 UNITS

3

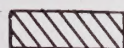
WILSON RANCH* BLUE STAR RESORTS, INC.
NC BROWN DEVELOPMENT, INC.
APPROX. 4,000 UNITS

4

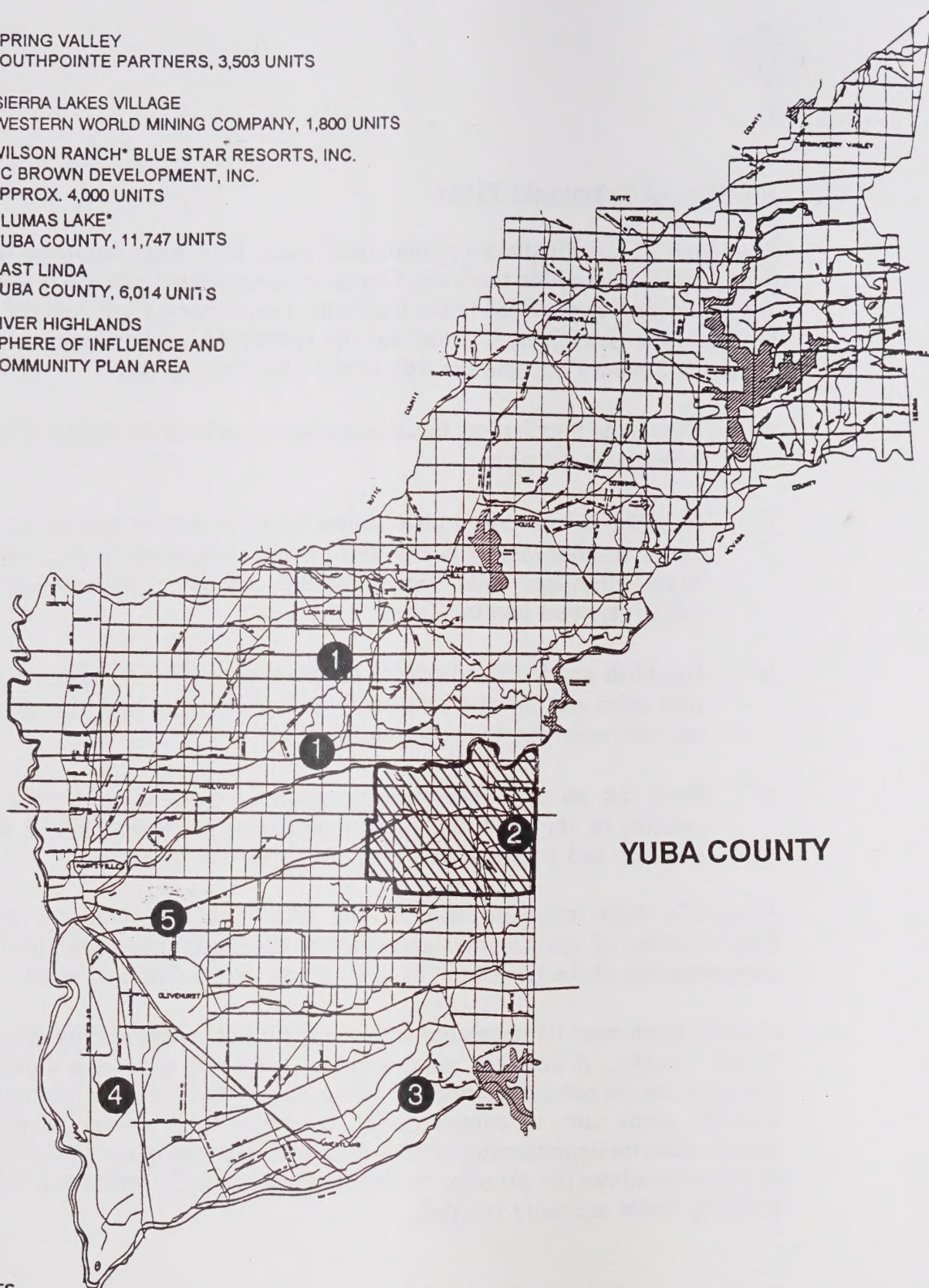
PLUMAS LAKE*
YUBA COUNTY, 11,747 UNITS

5

EAST LINDA
YUBA COUNTY, 6,014 UNITS



RIVER HIGHLANDS
SPHERE OF INFLUENCE AND
COMMUNITY PLAN AREA



SOURCE: Yuba County Planning and Building Services Department, 1992.

QUAD

SPECIFIC PLANS/COMMUNITY PLANS

**FIGURE
8-15**



A community plan is a specialized plan that addresses a particular region or community within the overall planning area. It refines the policies of the County's *General Plan* as they apply to a smaller area.

Community plans must also be internally consistent with the general plan of which they are a part. A community plan must, by State law, include or reference each of the seven mandatory general plan elements. It must also:

- 1) apply "to a defined geographic portion of the total area included in the general plan,"
- 2) contain specific development policies, and
- 3) identify measures that implement the policies. (Office of Planning and Research: 1990)

Each of the approved or pending specific and community plans is briefly described below.

Spring Valley Specific Plan

The *Spring Valley Specific Plan* was approved in 1992. The Specific Plan area is located approximately 12 miles east of Marysville in the Yuba County foothills, north of the Yuba River, and consists of two large parcels totaling 2,450± acres separated by Spring Valley Road. The planned uses include residential development with a mix of residential types and densities; a town center and neighborhood commercial area; sites for two elementary schools and a high school; public facilities, including a wastewater treatment facility, domestic water treatment plant and roads; and parks and open space, including a golf course and equestrian center. A total of 3,503 dwelling units is planned. Approval of this Specific Plan is currently the subject of a referendum.

Wilson Ranch Specific Plan

The *Wilson Ranch Specific Plan* is a proposed specific plan for development of approximately 4,000 dwelling units on a site located approximately two and one-half miles east of Wheatland. The 1,400 acre development also would



include a golf course, commercial uses, a school site, a regional park, and various public and open space uses.

Plumas Lake Specific Plan

The recently adopted *Plumas Lake Specific Plan* affects potential development of a 4,700-acre area generally bounded by State Route 70 on the east, Bear River on the south, Feather River Boulevard on the west and Ella and Murphy roads on the north. A total of 11,747 dwelling units is proposed for the site.

East Linda Specific Plan

The *East Linda Specific Plan* was adopted in 1990 for an area consisting of 1,760 acres located east of the community of Linda. It is generally bounded by the Linda Levee on the north (separating the area from the Yuba River flood plain), Erle Road on the south, Yuba College and the urbanized area of Linda on the west, and a line generally 1500 feet east of Griffith Avenue on the east. Planned land uses include a total of 6,014 dwelling units, business and commercial uses, five school sites, parks and recreation/floodway easement/detention basins.

River Highlands Community Plan

The recently adopted *River Highlands Community Plan* affects about 21,800 acres 20 miles east of Marysville along State Route 20. Yuba River forms its northern boundary and Nevada County borders it to the east. Beale Air Force Base adjoins to the south and west. The Plan guides development of the area through 2013. The Plan assumes construction of over 300 dwelling units per year throughout the planning period, which are anticipated to be occupied by roughly equal numbers of retirees, commuters, and as second homes. Planned infrastructure includes water storage, treatment, and distribution facilities; sewage collection and treatment system; a new arterial road; and other roadway improvements. Rural foothill character will be maintained.



Sierra Lakes Village Specific Plan

The *Sierra Lakes Village Specific Plan* area is entirely within the *River Highlands Community Plan*. Although the draft plan for Sierra Lakes preceded the *River Highlands Community Plan*, the Specific Plan is now in the process of being modified to conform to the recently adopted Community Plan. The Specific Plan now proposes 1,800 residential units on 775 acres. Mining operations once proposed in conjunction with the Specific Plan are no longer under consideration.

8.2 AGRICULTURAL LANDS

Agriculture is the most extensive land use in Yuba County and the most significant component of the county's economy. Approximately 278,943 acres, or 68 percent of the total county area, are comprised of agricultural croplands and pasture.

Many agricultural counties have implemented the Williamson Act (California Land Conservation Act), which reduces property taxes on qualifying agricultural land in exchange for a commitment from the landowner to not develop the land with uses other than those compatible with and supportive of agriculture. Yuba County has chosen not to participate in this program. State subventions to counties, originally intended to compensate counties for the loss of property tax revenues, have been drastically reduced over time due to State budget shortfalls.

In response to the need to protect agricultural land and operations, the Yuba County Board of Supervisors has adopted a consumer disclosure ordinance (Chapter 11.55 of the Yuba County Ordinance Code) that declares it to be in the public interest to preserve and protect agricultural land and operations for agricultural use. The ordinance finds that "...residential development adjacent to such land and operations often leads to restrictions on such operations to the detriment of these uses and economic viability of the County's...agricultural industries as a whole." The ordinance has as its purposes the promotion of the general health, safety and welfare; the protection of those lands zoned, designated or used for agriculture; the support and encouragement of agricultural operations; and prior notification of prospective purchasers adjacent to or near agricultural operations of the inherent problems associated with such purchases, including sounds, dust, odor, fertilizers, pesticides, smoke, and vibrations. In order to accomplish its purposes, the ordinance contains requirements for disclosures to be given warning residential users of land of the



potential inconveniences agricultural operations may present by those selling property as well as at the point building permits are issued by the County.

8.2.1 Prime Soils

Croplands are found in the areas of prime agricultural soil and soils with unique suitability to certain crops in the western Valley floor area of the county along the historic floodplain of the Yuba and Feather rivers due to the relatively flat topography, water supply and soil conditions. Grazing lands are found primarily in the central and eastern portions of the county, in the foothills of the Sierra Nevada Mountains, although grazing also occurs on uncultivated portions of the Valley floor. Livestock grazing also occurs in the Plumas and Tahoe National Forests. The land that is now devoted to agriculture in the county was historically covered by native grasslands and riparian forest.

The relative value of any site for agricultural use is directly affected by the type of soil present. An indication of soil suitability for agricultural use is provided by the Land Capability classification system as applied by the SCS. An explanation of the SCS Land Capability Classification system is presented in Table 2-4. Table 2-3 relates these classifications to the major soil associations identified in Yuba County, as presented in Section 2.5.

8.2.2 Important Farmlands

The California Department of Conservation's Farmland Mapping and Monitoring Program (FMMP) maintains inventories of important farmland within California. Table 8-14 shows the 1990 FMMP inventory of land within Yuba County, and Figure 8-16 shows the general locations of such important farmlands.

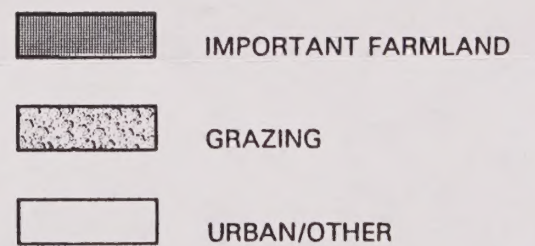
Under this classification system, prime farmland has the best combination of physical and chemical characteristics for crop production. Farmland of statewide importance is not as productive as prime soil, though it still has supported crop production for at least the three preceding years. Unique farmland ranks below prime and statewide important farmlands, though it is still capable of producing "high economic value crops" such as olives, avocados, or grapes. Finally, farmland of local importance ranks below the other three, yet may be important to the local economy due to its productivity.

YUBA COUNTY

Map showing land use patterns in Yuba County, including areas designated as Important Farmland, Grazing, and Urban/Other.

Legend:

- Important Farmland (Dark Grid Pattern)
- Grazing (Light Grid Pattern)
- Urban/Other (White)



Source: Farmland Mapping and Monitoring Program



TABLE 8-14
AGRICULTURAL LANDS IN YUBA COUNTY-1990

LAND USE CATEGORY ¹	ACRES
Prime Farmland	51,685
Farmland of Statewide Importance	0
Unique Farmland	41,701
Irrigated Pasture/Nonirrigated Grain ²	13,029
Grazing Land	132,416
Urban Built-up Land	10,721
Other Lands	155,300
Water Area	6,592
TOTAL AREA INVENTORIED: 411,444	

¹This table includes preliminary data for Yuba County which was added to the Important Farmlands inventory in 1990.

²Irrigated Pasture and Nonirrigated Grain may be included in a pending final definition for Farmland of Local Importance.

Source: California Department of Conservation, Farmland Mapping and Monitoring Program, *Farmland Conversion Report, 1988 to 1990*, June 1992.

8.2.3 Agricultural Production

The Yuba County Department of Agriculture publishes information on annual agricultural production within the county. According to the Department's *Agricultural Crop Report for 1991*:

Agriculture in Yuba County for 1991 showed an increase over 1990 production. The gross value of agriculture for 1991 was \$120,867,200; a 27% or \$25,717,600 increase from the 1990 crop value of \$95,149,600. Prunes showed the largest increase due to very low yields in 1990 and a good yield and better price in 1991. Rice showed a



marked higher value due to increase in acreage and yield over 1990.

Table 8-15 shows a five-year summary of valuation of agricultural production, and Table 8-16 presents crop acreage harvested for the same period. In contrast with many counties which are experiencing increased urbanization, cultivated acreage in Yuba County actually increased over the five-year period. The leading crops in Yuba County in 1991 were prunes, rice, peaches, walnuts, cattle and calves, timber, kiwi, milk, pasture, almonds, corn and hay.

As noted above, grazing lands occupy significant areas of the county. According to the *Crop Report*, dryland pasture occupied 198,000 acres in 1991, down from 200,000 acres in 1990; however, the number of head of cattle and lambs increased during the same period. There are five operating dairies in the county (Rudy Schnagl, Regional Water Quality Control Board, pers. comm., August 1992).

8.3 OPEN SPACE LANDS

Open space lands are defined in the California Government Code as unimproved and devoted to the preservation of natural resources, managed production of resources, outdoor recreation, or public health and safety. Each type of open space use is discussed below.

8.3.1 Preservation of Natural Resources

Open space for the preservation of natural resources is defined as including area required for the preservation of plant and animal life, including habitat for fish and wildlife species; area required for ecologic and other scientific study purposes; rivers, streams, bays and estuaries; and lake shores, banks of rivers and streams, and watershed lands.

Section 5.0 of this Paper provides information on areas required for the preservation of plant and animal life, including wetlands, wildlife area/refuges, and timberlands.



TABLE 8-15
VALUATION OF AGRICULTURAL PRODUCTION

CROP TYPE	YEAR				
	1992	1991	1990	1989	1988
Fruit and nut crops	\$68,023,000	\$73,691,200	\$51,824,000	\$64,252,600	\$55,045,600
Field and vegetable crops	28,340,500	28,117,000	22,411,100	20,357,900	18,168,000
Nursery, seed and timber ¹	3,310,900	5,825,000	5,853,800	2,762,000	2,586,200
TOTAL CROP VALUES	\$99,674,400	\$107,633,200	\$80,088,900	\$87,372,500	\$75,799,800
Livestock and Agriculture	17,549,400	13,234,000	15,060,700	13,531,000	12,639,500
TOTAL AGRICULTURAL VALUE	\$117,223,800	\$120,867,200	\$95,149,600	\$100,903,500	\$88,439,300

¹Timber is reported one year after production.

Source: Yuba County Department of Agriculture, *Agricultural Crop Report for 1991, 1992*.



TABLE 8-16
CROP ACREAGE HARVESTED 1988-1992

CROP TYPES	YEAR				
	1992	1991	1990 ¹	1989	1988
Fruit and nut crops	27,420	26,474	26,065	25,153	24,377
Field and vegetable crops	249,895	248,458	247,447	247,947	247,947
Seed crops	-	75	129	175	175
TOTAL ACREAGE HARVESTED	277,315	275,007	273,641	273,275	272,499

¹An editorial correction was made to Field and Vegetable acreage.

Source: Yuba County Department of Agriculture, *Agricultural Crop Report for 1991, 1992*.

8.3.2 Managed Production of Open Space Resources

Open space used for the managed production of resources includes forest lands, rangeland, agricultural lands and areas of economic importance for the production of food or fiber; areas required for recharge of groundwater basins; bays, estuaries, marshes, rivers and streams which are important for the management of commercial fisheries; and areas containing major mineral deposits, including those in short supply.

Agricultural lands and rangeland are discussed in Section 8.2 of this Paper. Groundwater recharge areas are discussed in Section 4.2.1.2; fisheries are discussed in Section 5.6; areas containing major mineral deposits are identified in Section 2.6; and timber and forest lands are discussed in Sections 5.8 and 8.4.

8.3.3 Outdoor Recreation

Open space for outdoor recreation includes areas of outstanding scenic, historic and cultural value; areas particularly suited for park and recreation purposes, including access to lake shores, beaches, rivers and streams; and



areas which serve as links between major recreation and open-space reservations, including utility easements, banks of rivers and streams, trails, and scenic highway corridors.

Areas of scenic value are addressed in Section 16.2 of this Paper; scenic highways are addressed in Section 16.3 and Section 12.1.3; areas of historic and cultural value are identified in Section 15.2; parks and recreation are discussed in Section 13.5; utilities are discussed in Section 17.0; and trails are addressed in Section 12.3.

Much interest has been expressed by Yuba County residents in trails (hiking, equestrian and bicycle), public access to the Yuba River, and development of a Yuba River parkway. Areas such as utility easements, river banks, and future trail routes will be examined during the *General Plan* update process to determine appropriate future links between major recreation and open space reservations.

8.3.4 Open Space for Public Health and Safety

Open space for public health and safety includes areas which require special management or regulation because of hazardous or special conditions such as earthquake fault zones, unstable soil areas, flood plains, watersheds, areas presenting high fire risks, areas required for the protection of water quality and water reservoirs and areas required for the protection and enhancement of air quality.

Earthquake fault zones are addressed Section 2.4 of this Paper; unstable soil areas are addressed in Section 2.5.1; flood plains are discussed in Section 4.1.5; watersheds are identified in Section 4.1.3; water quality is addressed in Sections 4.1.2 and 4.2.1; areas presenting high fire risks are identified in Section 9.2.2.1, air quality is addressed in Section 3.2, and dam inundation areas are identified in Section 2.4.9.

8.3.5 Demands for Trail-Oriented Use

Demands for trail-oriented recreational use must be considered by the County in developing open space programs, as well as the feasibility of integrating city and county trail routes with appropriate segments of the California Recreational Trails System.



Refer to Section 12.3 for a discussion of the existing and planned trail system. As noted in Section 8.3.3 above, a high demand for trail-oriented recreation use has been expressed locally by the Citizens Advisory Committee.

8.4 TIMBER PRESERVE ZONE LANDS AND NATIONAL FOREST LANDS

Approximately 27,400 acres of private lands in Yuba County are zoned Timberland Preserve (TPZ)(*Yuba County Land Use Element*, 1988). TPZ was mandated under the Z'Berg-Warren-Collier Forest Taxation Reform Act of 1976, now known as the Timberland Productivity Act of 1982. Its purpose is to discourage the premature conversion of timberland to other uses. State law also requires the *Land Use Element* of the *General Plan* to reflect the distribution of TPZ zoning, and to include a land use category that provides for timber production. The State *General Plan Guidelines* describe TPZ as follows:

Patterned after the Williamson Act, TPZs are rolling ten-year contracts providing preferential tax assessments to qualified timberlands. Under this program, assessments on timber are based on the value of the timber at the time of harvest, rather than an annual assessment on the market value of standing timber. Assessment of zoned timberland is based on a statutory value of land that is related to site capability, and is annually indexed to changes in the periodic immediate harvest value.

During the first two years of the act, local governments could adopt TPZ zoning on qualified parcels without approval of the property owner provided that the statutory procedures were followed. Currently, additions to the local program are limited to requests from property owners.

Subject to approval by the legislative body, land may be removed from a TPZ by rezoning. The effective date of the new zone will be deferred, however, until expiration of the ten-year restriction. The local legislative body may, under special circumstances, approve immediate rezonings as well.

Timberlands and National Forest lands are discussed in Section 5.8 of this Paper. National Forest lands are under the jurisdiction of the federal government (U.S. Department of Agriculture, U.S. Forest Service) for land use planning purposes.



8.5 COMMUNITY BOUNDARIES

Community boundaries can be adopted as part of the County *General Plan* to establish the limits of urban development, or the urban/agricultural interface, around cities. According to Professor Irving Schiffman, in the guidebook *Alternative Techniques for Controlling Land Use*, the definition of an urban (community) boundary is:

A planning device that defines the ultimate growth area around incorporated cities, within which the cities and the county seek to cooperate in matters affecting land development. County land use policies are designed to discourage urban-type growth from occurring outside of urban area boundaries. Some communities establish several lines within the urban area boundary, intending them to correspond with the phasing of growth over an extended period of time. (p. 84)

Community boundaries can also be established around unincorporated communities to define the area where urban development can occur. Its other function--as a means of coordinating planning between a county and a city--does not apply in this type of situation, as the County is the planning agency for the community as well as the surrounding area. A discussion of city/county land use planning interface is contained in Section 8.7 below.

Professor Schiffman's guidebook provides the following description of the customary procedure followed in establishing community boundaries or urban limit lines:

- Population growth is projected over a specific time period. The population forecast is then used as a basis on which to predict land demand within the urban area.
- The boundary is drawn in conformity with planning criteria, employing natural physical barriers and existing road patterns where possible. Planning objectives may include the promotion of contiguous and fiscally sound growth along with protection of open space and agricultural lands, scenic corridors, environmentally sensitive areas, and archaeological and historic sites.



- The boundary is related to the projected ultimate service area of the city as determined in its general plan.
- The boundary should include land necessary to fill in and complete existing neighborhoods while utilizing existing public investments to the fullest.
- The boundary is drawn so as to minimize urban interference with agricultural or other resource uses. Where necessary, low-density development is proposed for the boundary's edge. (p. 84-85)

He has also identified the following potential benefits and limitations of this approach:

Potential Benefits

- Unlike the sphere of influence designation, it commits the *county* to the policy that urban development take place in locations where urban services can be provided in the most efficient and economical manner.
- Preserves agricultural, forested, and open space lands outside the boundary area while reducing leapfrog development.
- Lessens uncertainty about future urban use, thus reducing the amount of long-term speculation and development buying in fringe areas not designated for future urban development.
- Allows county officials to concern themselves primarily with the delivery of *rural* services.

Limitations

- To the extent that adoption of an urban area boundary reduces the supply of developable land, it could lead to higher land prices. Planning policies may need to be adopted to assure that



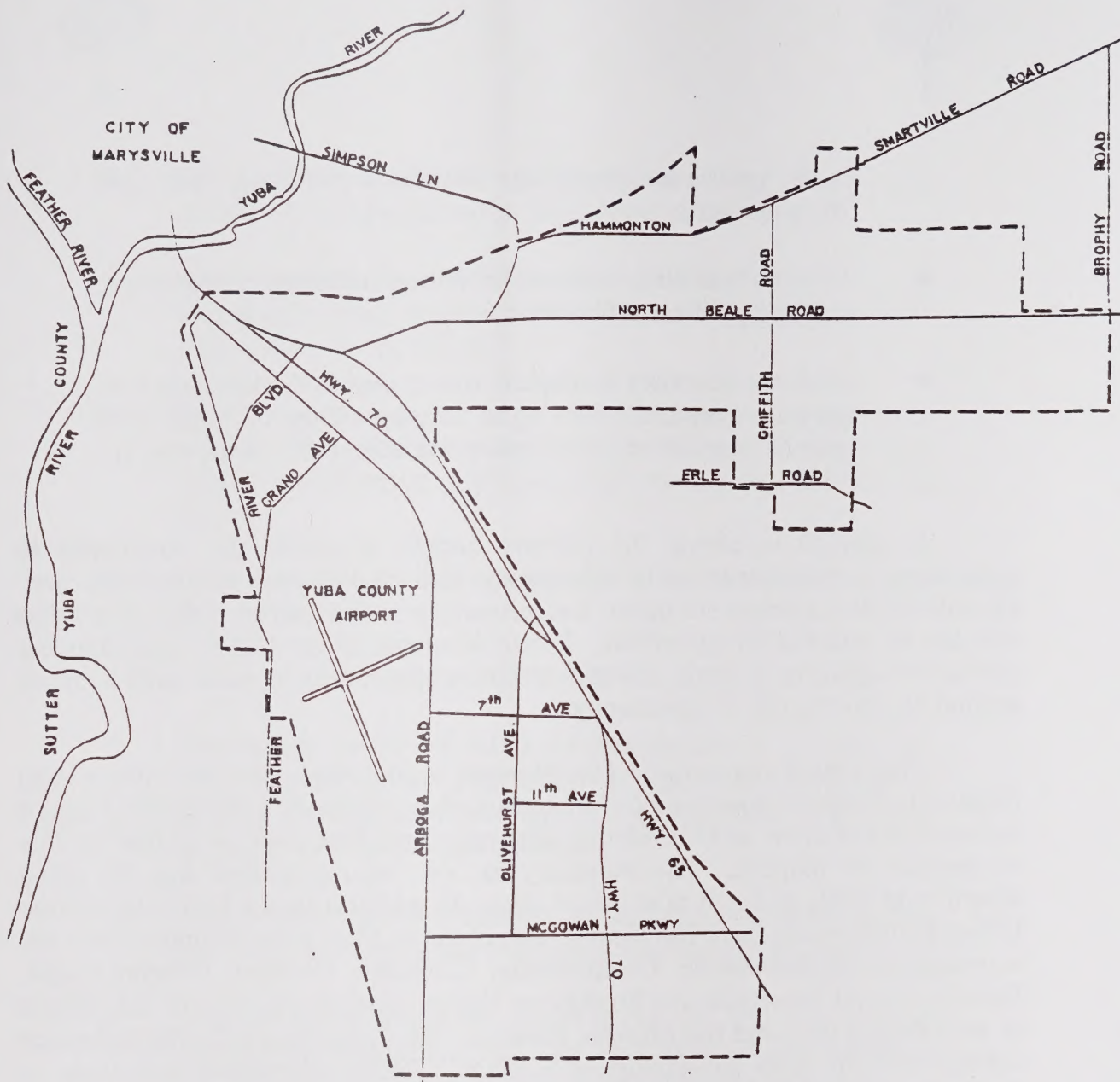
such goals as providing affordable housing are not compromised.

- Potentially shifts land values from rural to urban service areas, creating political problems.
- After the boundary is adopted, county decisionmakers may face pressure from those seeking to develop within the urban area boundary at a time or in a place not acceptable to the city. (p. 85-86)

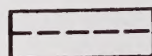
As alluded to above, the primary benefit of community boundaries to agricultural land preservation is defining and limiting the areas within which non-agricultural development can occur. Large, contiguous and commercially viable areas can thus be retained for agriculture. Urban development can also be guided to less productive agricultural lands, where there is an opportunity to make such a choice around an existing city or community.

The Yuba County *Land Use Element*, amended in 1988, contains a map (Figure 8-17) which shows a single Urban Boundary surrounding the unincorporated communities of Linda and Olivehurst. The text of the Plan does not define the line or describe its purpose. The Boundary has not been amended since its initial adoption in 1981, and it is now out of date. In addition to the Linda/Olivehurst Urban Boundary, the *Land Use Element* also contains "Core Area" boundaries for the communities of Brownsville, Camptonville, Challenge, Dobbins, Oregon House, Laurellen Road, Smartville and Strawberry Valley. Core Areas also are not defined or described in the *Land Use Element*, however, the *Yuba County Zoning Ordinance* utilizes the Core Area terminology in Section 12.25.090, Community Standards, to distinguish areas in which certain standards and uses are applicable.

During the *General Plan Update*, the purpose of Urban Boundaries and Core Areas should be clarified and new Community Boundaries developed which reflect current growth projections and directions.



N.T.S.



URBAN BOUNDARY

Source: Yuba County Land Use Element, 1988

QUAD

**LINDA-OLIVEHURST
URBAN BOUNDARY**

**FIGURE
8-17**



8.6 BEALE AIR FORCE BASE

Beale Air Force Base occupies 22,944 acres of land east of Marysville and Olivehurst. It is under the jurisdiction of the federal government, U.S. Air Force, for land use planning purposes. There is no current Master Plan for Base planning and development (Dennis Bruner, Beale AFB, pers. comm., August 1992).

Refer to Sections 6.6 and 19.8 of this Paper for further discussions of Beale Air Force Base.

As noted in the *Issues, Opportunities, Assumptions, Vision Statement and Goals* Paper, the future of Beale Air Force Base is critical to County plans since the Base occupies a large portion of the county, directly as well as indirectly through its Area of Influence. It is important to the *General Plan* process that as much information as possible be obtained concerning the future of the Air Force Base so that it may be reflected in the *General Plan* update. It is equally important that Yuba County plan to avoid land use incompatibilities that could impinge on Beale Air Force Base and limit its utility as a military installation. The Beale Air Force Base Area of Influence should be delineated on the Land Use Diagram and land uses within this area should be restricted to those determined to be compatible with Base operations. Because Base operations can change over time, it is also important not to plan too narrowly, foreclosing options for the Base and the County.

8.7 CITY/COUNTY LAND USE PLANNING INTERFACE

State law provides for incorporated cities to independently plan for their corporate limits and areas surrounding them which may bear a relationship to the city's planning. By planning for areas outside the city's corporate limits, a city can plan for future annexations and extension of services, and generally communicate its concerns and preferences to the County and land owners. The *State General Plan Guidelines* provide the following guidance on the subject:

Coordinating city and county actions in the unincorporated fringe areas is a continuing problem for local governments. Cities and counties should work together to delineate planning areas and develop formal agreements for processing development proposals...(p. 7)

Counties should include incorporated cities within their planning areas. Because the activities of cities affect many county concerns, a county



cannot and must not disregard city general plans. Ideally, a county's planning area should include all incorporated cities. The provisions of the cities' plans should be integrated into the county plan to the extent possible and county objectives, policies, and implementation programs should reflect the projected impacts of city planning. In addition, each city plan should be represented in generalized form on the county's general plan diagram. (p. 8)

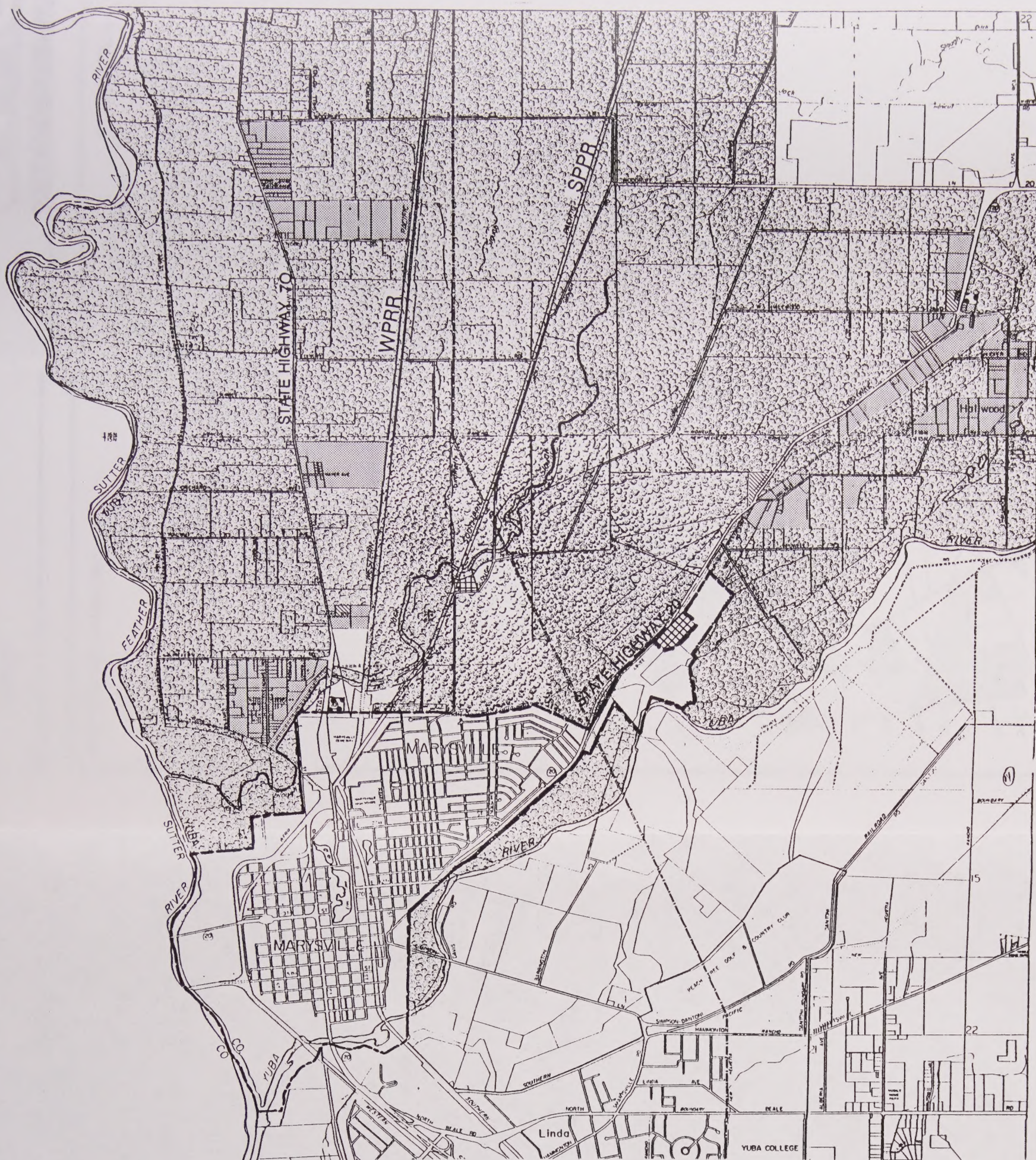
The *Land Use Element* should establish policy concerning how city and County general plans are to be coordinated and the impacts of city planning should be reflected in County decision making.

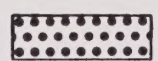
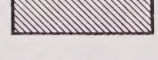
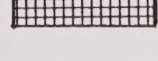
8.7.1 City of Marysville

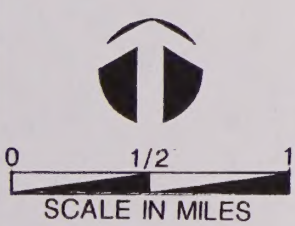
Existing land use within the City of Marysville's Primary Sphere of Influence is shown on Figure 8-18 and Table 8-17. The City of Marysville's *General Plan* is described in Section 19.4 of this Paper. The City's Sphere of Influence is shown on Figure 19-3. The City's *General Plan* designates land uses for only a portion of that area, as shown on Figure 19-2. The City is currently in the process of preparing a specific plan, the *North Marysville Specific Plan*, for a 2,695-acre area north of the city limits and within the City's Primary Sphere of Influence. The City intends to concurrently amend its *General Plan* to assure consistency between the two planning documents, and pursue annexation of all or portions of the *Specific Plan* area.

8.7.2 City of Wheatland

Existing land use within the City of Wheatland's Sphere of Influence is shown on Figure 8-19 and Table 8-18. It should be noted that only a portion of the area shown as agricultural on Figure 8-19 is presently used for agricultural purposes, including grazing and pasture. Some of this land lies fallow. The City of Wheatland's *General Plan* is discussed in Section 19.5 of this Paper. The Sphere of Influence for the City was amended in 1992 to encompass the



-  PUBLIC
-  AGRICULTURE
-  RESIDENTIAL
-  COMMERCIAL
-  INDUSTRIAL
-  CITY LIMIT



Yuba County

Source: QUAD Consultants 1992 Land Use Survey



Existing Land Use
WHEATLAND
Area



area shown on Figure 19-4. The City's current *General Plan* encompasses only the area within the existing city limits which encompasses 0.8 square mile (approximately 512 acres). There is no certainty that the City will proceed with an amendment to its *General Plan* in the immediate future. Presumably, future *General Plan* updates would provide planning direction for the area within the City's Sphere of Influence.

The Jones Ranch development has been proposed within the City of Wheatland Sphere of Influence (SOI), which also would be within the Wheatland Community Boundary identified in the *Yuba County General Plan*. The Jones Ranch project would occupy two separate areas. A 189 acre parcel of the proposed Jones Ranch project is located contiguous to the City limits just west of the high school. Wheatland Road forms its northern boundary. This parcel is situated on the same east-west ridge that the existing City was built on, and therefore, severe flooding is not anticipated to be a problem. The parcel is said by the developer to have less agricultural potential than much of the Wheatland vicinity. The parcel would be developed to include 154.8 acres of residential uses, accommodating 824 dwelling units; 5.4 acres of community uses; 3.6 acres designated for a park; 11.0 acres of open space; and 14.2 acres of rights-of-way for the internal roadway system.

Also proposed to be developed as part of the Jones Ranch project are 650 acres located northwest of the City limits. Presently, most of this parcel is used for livestock grazing; about 10 percent of the northwestern portion is under rice cultivation. The northern boundary of this parcel is Dairy Road. The eastern boundary is near State Route 65. A 40.6 acre portion between Oakley Lane and State Route 65 in the northeastern corner of the parcel would be designated for light industrial uses in an attempt to maintain a reasonable jobs/housing balance. Residential uses would occupy 326.8 acres and accommodate 1,457 dwelling units. A total of 262.6 acres would be devoted to open space to preserve wetlands and other habitat values. The majority of the more concentrated residential density is located south of Dry Creek to take advantage of the existing levee on the south side of the creek.



**TABLE 8-17
MARYSVILLE AREA**

LAND USE	ACREAGE
Residential	905
Commercial	3
Industrial	37
Public	9
Agriculture	12,942
Total	13,896

* Total does not include the City's 8,800-acre Sphere of Influence.

Source: QUAD Consultants Land Use Survey, 1992.

**TABLE 8-18
WHEATLAND AREA**

LAND USE	ACREAGE
Residential	560
Public	28
Agriculture	7700
City Limits	512
Total	8800

Source: QUAD Consultants Land Use Survey, 1992.



SECTION NINE
PUBLIC SAFETY



SECTION NINE PUBLIC SAFETY

State General Plan Guidelines require a safety element to be included in county general plans. These elements typically address public health and safety in relation to seismic and geologic hazards, fire, and releases of hazardous materials. Information in this section derives, in part, from the *Seismic Safety* and *Safety* elements of the *Yuba County General Plan*, adopted in 1980 by the Board of Supervisors. These elements are not being updated as a part of this current *General Plan Update*. Some of the information concerning safety has, however, been updated for the present purposes.

This section is devoted largely to risk of upset of hazardous materials, emergency response to such upset conditions, evacuation planning, county-wide fire hazard, and fire safety planning. There are other issues that affect public health and safety, such as seismic and geologic hazards (including flooding), air quality effects, police protection, noise effects, et cetera. These are fully addressed in other sections of this Paper. For example, the "Earth" section of this document (Section 2.0) describes seismic and other geologic hazards.

9.1 RISK OF UPSET

This section addresses risk to public and environmental health and safety as a result of explosion or the release of hazardous substances or hazardous wastes under accidental or upset conditions. Hazardous *substances* are used, stored, and transported throughout the County. Hazardous *wastes* are generated by many commercial and industrial facilities as well as households.

Hazardous *substances* include, but are not limited to, petroleum products, pesticides and herbicides, chemicals, and radiation. Such substances are used, stored, and transported virtually everywhere.

Hazardous *wastes* are those hazardous substances for which the generator of such substances has no further use. They are, in other words, hazardous substances destined for disposal. The U.S. Environmental Protection Agency (EPA) has classified over 500 hazardous wastes, which are divided among more than 20 categories. The federal Resource Conservation and Recovery Act (RCRA) provides



for "cradle to grave" tracking of hazardous wastes from the moment they are generated until they are recycled, stabilized, neutralized, safely and permanently stored (after stabilization or neutralization), or destroyed (most often through incineration). In California, RCRA is administered on behalf of the EPA by the Toxic Substances Control Program (TSCP). Formerly under the auspices of the California Department of Health Services (DHS), the TSCP was transferred in July 1991 to the newly created California Environmental Protection Agency (Cal-EPA) and renamed the Department of Toxic Substances Control. The Department maintains a database called the Hazardous Waste Information System. The "HWIS List" contains information on all hazardous wastes generated, treated, stored, and/or transported into, out of, or within Yuba County. Much of this information was used to prepare the Yuba County *Hazardous Waste Management Plan (HWMP)*, required under the Tanner Act (AB 2948, Tanner 1986). Whenever hazardous wastes are transported, manifests must be completed and signed to facilitate tracking from the source to the recycling, storage, treatment, or disposal facility.

Hazardous wastes are a problem not confined to highly industrialized areas. Waste oils and other petroleum products are among the several hundred substances classified as hazardous wastes. Every gasoline service station and automobile repair facility in Yuba County is a hazardous waste generator. Other facilities or activities within the county that are likely to store, use, or transport hazardous substances and/or generate hazardous wastes include photoprocessing laboratories, dry cleaners, paint manufacturers, mining operations, transportation facilities (railroads, trucking firms, Yuba County Airport), retail stores, and other manufacturing firms. School and college chemistry laboratories and automotive shops use and store hazardous substances and/or generate hazardous waste. Hospitals produce medical and infectious wastes that require special handling. There are a number of firms in the County that manufacture lumber and wood products (e.g., doors, molding), and these manufacturing processes generate hazardous wastes. Several food processing plants also operate in Yuba County. Other local plants produce plastic or fiberglass products, and Yuba County houses soft drink bottling facilities (Marysville Medical Group and Yuba-Sutter Chamber of Commerce n.d.:*Yuba-Sutter Economic Profile*).

Beale Air Force Base (AFB), like virtually every military facility in the country, is a major generator of hazardous wastes, largely in the form of jet and diesel fuels and solvents used to clean aircraft parts. These chemicals often find their way into the soil and ground water and are subject to cleanup under a variety of federal overview and funding programs, including the "Superfund" toxic hot spots



cleanup program. Thus, even a small, rural county with a primarily agricultural economic base will generate significant quantities of hazardous waste.

The greatest risks of upset or accidental release of hazardous substances and wastes into the environment (i.e., air, soil, or water) are during transport, during transfer from a mobile tank to a fixed storage tank, or from leaking storage tanks. Hazardous substances and hazardous wastes are continuously transported across and within the county by truck and railroad. Until recent improvements in storage tank technology and installation, use, inspection, and disposal procedures, most, if not nearly all, storage tanks would eventually leak contents into soil and water. The County maintains a list of all leaking underground storage tanks (USTs) that includes location, contents, and other information.

Household hazardous wastes are a potential source of risk that should not be overlooked. Although they constitute only a small percentage (typically five percent or less) of all household wastes, household hazardous wastes are a particular danger to the environment. Typically, they include waste oil, solvents (such as paint thinners and cleaning solutions), pesticides, dyes and paints, metal-containing liquids (such as the contents of batteries), and a variety of other liquids, such as drain cleaners and bleaches (Bi-County Solid Waste Authority 1989:3). The danger from household hazardous wastes arises when these wastes are improperly disposed of in county and municipal landfills, which are not designed to safely contain hazardous substances and hazardous wastes. Fuels and solvents in particular can migrate long distances through soils to reach ground water. Most landfill liners are easily passed by such substances, which results in destruction of the liners and release of other substances into soil and ground water. Within the last few years, provisions of and subsequent amendments to RCRA phased out disposal of all untreated hazardous wastes to landfills (i.e., the so-called "land ban"), including Class I landfills specifically designed for hazardous waste disposal. Landfills have simply proven incapable of safely storing hazardous wastes in perpetuity without eventually leaking them into the environment.

In February 1989, Resolution 88-4 of the California Waste Management Board (CWMB) required revision of the *Yuba-Sutter Bi-County Solid Waste Management Plan* to include a plan for household hazardous waste disposal (Bi-County Solid Waste Authority 1989:1). That Plan was completed in May 1989 and approved by the CWMB in July 1989. It consists of two major elements: a household hazardous waste collection program and a random load checking program. Under the Plan a facility will be provided to handle collected wastes, with emphasis on reuse and



recycling. Those materials not feasible for reuse and recycling will be transported to a Cal-EPA approved treatment, storage, and disposal facility. Another important facet of the Plan is a public education program. These programs are funded through surcharges on residential and commercial waste collection fees (Bi-County Solid Waste Authority 1989:4-5).

9.1.1 Routine Emergency Response

There are two levels of response to hazardous materials (hazmat) incidents in Yuba County. For minor hazmat spills, the Marysville Fire Department hazmat response team will respond anywhere in Yuba County. For releases of disastrous proportions that may result from floods, dam failures, earthquakes, large-scale fires, or wars, the Yuba County *Multihazard Functional Planning Guidance* plan will take effect.

Because there is no County fire department, Yuba County contracts with the City of Marysville Fire Department for emergency response services related to routine hazardous materials upsets. The Marysville Fire Department maintains "hazmat" emergency response personnel and equipment sufficient to respond in any part of the county within a specified amount of time. The County contributes funding support for this service. Along with the capability of identifying and providing emergency cleanup for hazmat spills or releases, the emergency response team is equipped to extricate persons who may be trapped as a result of a hazmat incident (Kelly Purdom, Director, Yuba County Office of Emergency Services, pers. comm., August 1992).

In order to assist in the monitoring of hazardous substances and provide necessary information to the hazmat emergency response team, the County maintains a computer database. Included in the database is information regarding the locations and types of hazardous materials and substances that are used and stored within the county. Also included are sensitive locations, such as schools, hospitals, retirement centers, and jails where relatively immobile populations may be at risk during nearby hazmat incidents (Purdom, pers. comm., August 1992). As noted, the County also maintains a listing of leaking underground storage tanks, and the Cal-EPA maintains the HWIS list to track the generation and movement of hazardous wastes.

Although explosions can occur in many ways, bombs represent one potential threat of explosion. For bomb-related emergencies, the County has an



informal agreement with the bomb disposal unit at Beale AFB to provide emergency response in the event of a bomb threat or discovery of a suspected explosive device (Purdum, pers. comm., August 1992).

9.1.2 Multihazard Response

In the event of a non-routine hazardous materials release or explosion of disastrous magnitude, it may be necessary for a number of emergency response agencies to coordinate large-scale response efforts. In order to pre-plan for such emergency response, Yuba County adopted a *Multihazard Functional Planning Guidance* document (hereafter called the Multihazard Plan) in compliance with the California Emergency Services Act, Chapter 7, Division 1, Title 2 of the Government Code and other state and local legislation and regulations, including:

- California Emergency Plan (December 1970) and sub-plans (as issued)
- California Emergency Resources Management Plan (January 9, 1968) and sub-plans (as issued)
- Governor's Orders and Regulations for a War Emergency (1971)
- County of Yuba Emergency Services Ordinance No. 479, May 25, 1971
- County of Yuba Ordinance establishing Continuity of Government in an Emergency (resolution #479, May 25, 1971)
- County of Yuba Ordinance establishing continuity of Government in an Emergency (Resolution #537, May 9, 1972)
- County of Yuba Resolution Adopting the County's Emergency Plan, Resolution #4.20.080, dated March 1, 1982

Considered a preparedness document, the Multihazard Plan is divided into three parts as follows:



Part One is the Basic Multihazard Plan, which provides overall organizational and operational concepts for responding to various types of identified hazards that may impact the jurisdiction.

Part Two includes twelve functional Annexes, which describe the emergency response organization. Each Annex is supported by Appendices that provide Emergency Action Checklists for hazard-specific responses.

Part Three contains operational data, such as listings of resources, key personnel, essential facilities (lodging, feeding, fallout shelters, etc.), contacts, and other data needed for conducting emergency operations.

This Multihazard Plan addresses the jurisdiction's planned response to extraordinary emergency situations associated with natural disasters, technological incidents, and nuclear defense operations. The Multihazard Plan does not apply to normal day-to-day emergencies and the well-established and routine procedures used in coping with such emergencies. Instead, the operational concepts reflected in this Multihazard Plan focus on potential large-scale disasters which can generate unique situations requiring unusual responses. Such disasters pose major threats to life and property and can impact the well-being of large numbers of people.

The Multihazard Plan should be considered as a preparedness document intended to be read and understood by emergency response agencies before an emergency. The State of California is currently divided into six OES Mutual Aid Regions. Regional Managers and their staffs (designated state agency representatives) will constitute Regional Emergency Management Staffs and will coordinate and support local emergency operations at the request of Operational Area Coordinators. The Multihazard Plan is designed to include Yuba County as part of this statewide emergency management system.

The twelve functional Annexes in the multihazard Plan include:

Annex A - Managing Emergency Operations

Annex B - Fire and Rescue Operations

Annex C - Law Enforcement and Traffic Control Operations



Annex D - Medical Operations

Annex E - Public Health Operations

Annex F - Coroner Operations

Annex G - Care and Shelter Operations

Annex H - Movement Operations

Annex I - Rescue Operations

Annex J - Construction and Engineering Operations

Annex K - Resources and Support Operations

Annex R - Radiological Protection

It is intended that individuals and agencies assigned emergency responsibilities in the Multihazard Plan prepare appropriate supporting plans and related Standing Operating Procedures, periodically review and update alerting procedures and resource listings, and maintain an acceptable level of preparedness to implement portions or all of the Multihazard Plan.

The Multihazard Plan identifies critical facilities, such as hospitals and schools, where people may gather and that relief agencies may use as points for distribution of supplies and services.

The *General Plan Update* should be reflective of and supportive of the Multihazard Plan, and the County should work with the Director of Emergency Services to update the Plan as needed.

The following paragraphs, addressing hazardous materials incidents associated with large-scale disasters, are excerpted from the Multihazard Plan with minor editing:

The release of hazardous materials can cause a multitude of problems that can be discussed in a general manner. The significance of the problems to the



environment, property, or human health is dependent on the type, location, and quantity of the material released. Releases of explosive and highly flammable materials have caused fatalities and injuries, necessitated large scale evacuation, and destroyed millions of dollars worth of property. Toxic chemicals in gaseous form have caused injuries and fatalities among emergency response teams and passersby. When toxic materials have entered either surface or ground water supplies, serious health effects have resulted. Releases of hazardous chemicals have been especially damaging when they have occurred in highly populated areas or along heavily traveled transportation routes.

The area in which a hazardous material is released is of utmost importance, as it will determine certain actions of responders. Incidents that occur in high density areas might require evacuation of the area, the closing of roads, etc. Incidents that occur in rural areas might require only the closing of roads. If an incident occurs where water supplies might be contaminated, then steps that it contained would need to be considered.

The quantity of hazardous material spilled is considered from the stand point of potential hazards and cleanup. Obviously, the more material released the greater the potential danger. In a cleanup situation, large amounts of material to be cleaned up might utilize one method deemed cost-effective, while a smaller amount to be cleaned up might be accomplished by another method, although at a higher cost rate.

Environmental factors should be considered in all hazardous material releases. Wind currents/direction may carry harmful gases, and dust particles some distance, creating dangerous situations for communities in the path of it. High temperatures may greatly increase the danger to responders and other if a spilled



material is combustible, explosive, or becomes volatilized at certain temperatures.

Hazardous material exposure is a risk faced by the communities of Yuba County. Exposure to these materials can occur via three highways that run through the area; materials are transported through the communities along these routes on a regular basis. Other exposure is from railroad transportation. Agricultural exposure is high in this agricultural area in the form of insecticides, fertilizers, and fungicides, etc. Although industry is minimal in this area, and exposure to an industrial incident is considered low to moderate, it is still a potential danger.

Yuba County is considered to be a rural area, far removed from the multiple risks of hazardous material emergencies normally associated with a more urbanized environment. It is true that the county and its cities do not have the large industrial complexes normally associated with a high incidence of hazardous material emergencies. However, it is equally true that when a hazardous material emergency occurs, the multiple resources that more urban communities draw upon are not immediately available to rural areas. Consequently, it is estimated that significant out-of-county assistance will be unavailable for a period of two to five hours.

The county contains major transportation arteries, such as State Highway 70, State Highway 20, State Highway 65, and the Southern Pacific Railroad and the Union Pacific Railroad, each transporting hundreds of thousands of tons of hazardous materials through and into the county each year. It is highly exposed to the effects of a major catastrophic hazardous material emergency due to the proximity of the highways and the two (2) railroads to densely populated areas.



The county contains at least one large diameter underground major oil pipeline traversing the county north to south. Agriculture utilizes large quantities of pesticides, which are stored at numerous sites around the county. Fixed facilities are limited to the industrial park south of the City of Marysville, and three (3) major oil company distributors located within the city limits of Marysville. Air transportation of hazardous materials includes Beale Air Force Base and area crop dusters.

9.1.3 Evacuation Routes

The Government Code specifies that the general plan must address evacuation routes and critical facilities (those facilities that either provide emergency services or house or serve people injured or killed during an emergency).

Annex H of the Multihazard Plan involves movement operations during a major emergency, and evacuation routes are contained in Appendix H-3 of the Multihazard Plan. It should also be noted that more specific plans prepared in support of the Multihazard Plan, including the County's Hazardous Materials, Dam Failure, Flooding, and Fire response plans also address evacuation routes. State and federal agencies that would assist in the event of evacuation may include:

California Highway Patrol (CHP)

Assists in moving vehicles and pedestrians from hazard areas; assists local law enforcement agencies in establishing evacuation routes and traffic control procedures; controls traffic on state freeways and highways within unincorporated areas of the state; and assists in preventing traffic from re-entering hazard areas.

Military Department

Assists in the evacuation of threatened areas and assists local law enforcement agencies in operations such as control of access to restricted or evacuated areas.



Department of Transportation (Caltrans)

Assists CHP in traffic control.

Department of General Services

Fleet Administration Division provides ground transportation to state emergency response personnel assisting in evacuation. The California State Police will assist local law enforcement personnel as requested.

Public Utilities Commission

Provides listings of commercial and private transportation vehicles that could be used for evacuation.

Department of Transportation (Federal)

Supports and assists federal, state, local and voluntary relief agencies in disaster relief transportation requirements.

Federal Aviation Administration

Uses air traffic control and aeronautical communications systems, as well as the services of technical operating and maintenance personnel, for the communication of essential information, the coordination of emergency search and rescue operations, or such other assistance as may be required.

Interstate Commerce Commission

Coordinates the location and scheduling of common carriers authorized and equipped to provide emergency transportation into and within disaster areas.

According to the Plan:

The Movement Coordinator will select the best routes from the endangered area to mass care facilities, considering the size of the population to be moved, road capacity and the roads which could become impassable if the hazard event occurred. Evacuation routes relating



to site-specific plans are contained in Appendix H to the Plan. For areas not covered by site-specific plans, the best evacuation routes will have to be selected at the time of the hazard event. As the emergency situation progresses, the Movement Coordinator will request regular updates from law enforcement and other field personnel on the condition of the road network and will adjust the selection of evacuation routes accordingly. Changes in evacuation routes will be communicated to traffic control personnel, transportation resource coordinators, access control personnel, Reception and Care Center Directors, and Public Information Officers.

A designated member of the CHP will function as the Office of Emergency Services (OES) Mutual Aid Region Movement Coordinator and will coordinate traffic control operations on a region-wide basis. The Movement Coordinator will be assisted by a representative of the State Department of Transportation (Caltrans) who will function as the Mutual Aid Region Transportation Coordinator. These Coordinators will constitute the Mutual Aid Region Movement Operations Group. They will refer requests for assistance from other regions, and other relevant information, to the State Movement Operations Group.

9.2 FIRE PROTECTION AND FIRE HAZARD

9.2.1 Fire Protection

Fire protection in Yuba County is provided by several agencies, reflecting the fact that there are city, county, state, and federally administered lands and privately-owned lands in the county. The two incorporated cities, Marysville and Wheatland, provide their own fire protection through the Marysville Fire Department and the Wheatland Fire Department.

Much of the information concerning fire protection in the county that is in the *General Plan Seismic Safety and Safety Elements* (County of Yuba 1980) is out of date, although it did provide some general information for this subsection.



Most of the updated information in this subsection, except as otherwise cited, was provided by Kelly Purdom, Director, Yuba County Office of Emergency Services.

Yuba County does not operate a county fire department. Consequently, the various communities within the county have organized their own fire protection through various districts, all of which are eligible for fire protection funding from various County and State sources. The County wholly or partially funds certain specific fire protection services. The Yuba County Sheriff's Office provides dispatching services to the City of Wheatland, Plumas-Brophy Fire District, and Olivehurst Public Utilities District as well as to the City of Marysville Fire Department for calls that this department responds to outside city limits. The County currently contracts with the California Department of Forestry and Fire Protection for dispatch services to the Loma Rica - Browns Valley Community Services District (CSD), Camptonville CSD, Smartville Fire Protection District (FPD), Dobbins-Oregon House FPD, and Foothill FPD. The County also contributes toward maintenance of a three repeater dispatching system operated by several of the foothill districts, each of which also contributes to the shared dispatching network. Some of the districts have contract arrangements with CDF to provide fire protection and medical aid services during the non-wildland fire season.

Unincorporated areas of the county are provided with fire protection by nine fire districts, community services districts, or public utilities districts (Figure 9-1) as described below. These districts receive fire mitigation fees collected by the County when building permits are issued. Table 13-5 summarizes fire mitigation fees collected for new dwellings in each district. See Section 13.11.2 for a discussion of the County's mitigation fee program.

CDF provides additional protection within State Responsibility Areas of the county, and the U.S. Forest Service is responsible for fire protection within Plumas and Tahoe National Forests, portions of which occupy Yuba County. Beale Air Force Base provides its own fire protection.

The Linda Fire District provides fire and rescue service and maintains two stations. The main station on Scales Road is operated by full-time paid professional fire fighters on a 24-hour basis (although nobody actually sleeps at the station). The staff includes a full-time fire chief and two on-call



captains. The other station on Broadway in Arboga is not staffed full-time, but equipment is maintained at the ready at this station (Purdom, pers. comm., August 1992). Including volunteer staff, Linda has 35 fire fighters (Marysville Medical Group and Yuba-Sutter Chamber of Commerce, *Yuba-Sutter Economic Profile*). As shown on Figure 9-1, the northern District boundary is the Yuba River, the western boundary is the Feather River, the southern boundary is at the southern end of Feather River Boulevard, the western boundary for the northern half of the District is around Brophy Road, and the western boundary for the southern half of the District is generally along the Western Pacific Railroad right-of-way.

The Olivehurst Public Utility District (OPUD) maintains a fire station in Olivehurst, which is staffed by a total of 23 personnel, including one full-time chief, one full-time fire fighter, and 21 part-time fire fighters. The part-time fire fighters are paid to be on-call (Mary Dunn, Secretary, OPUD, pers. comm., September 1992). The station has seven vehicles. Service boundaries generally conform the limits of the community. Dispatching service for this station is provided by the Yuba County Sheriff's Office under an agreement between the County and the District (Marysville Medical Group and Yuba-Sutter Chamber of Commerce, *Yuba-Sutter Economic Profile*; Purdom, pers. comm., August 1992).

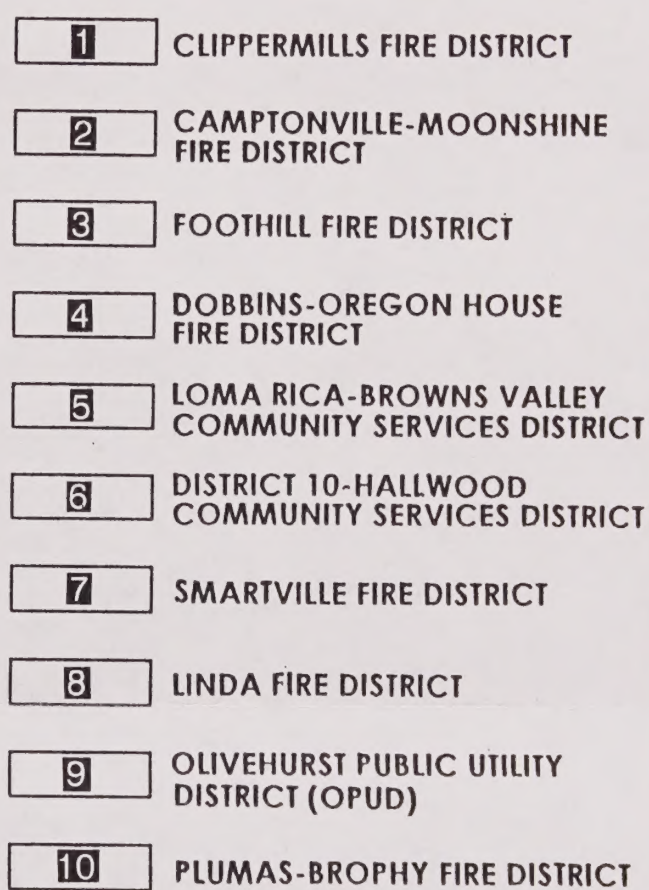
The Plumas-Brophy Fire District maintains the Plumas-Brophy Fire Station on Dairy Road, a short distance northwest of Wheatland. This is a volunteer fire department, with dispatching provided by the Yuba County Sheriff's Office under an agreement between the County and the District. As shown on Figure 9-1, the western District boundary is generally along State Highway 70, the northern boundary is along Erle Road in the western half of the District and about two miles south of 6th Street in the eastern half of the District. The eastern District Boundary is generally along the eastern boundary of Johnson Rancho, just west of Camp Far West Reservoir, and the southern boundary is primarily along the Bear River.

The Dobbins-Oregon House Fire District maintains the Dobbins-Oregon House fire station on Marysville Road near Texas Hill Road in Oregon House. This is a volunteer fire department, with dispatching provided by CDF. The southern District boundary is an east-west line that passes through Ure Mountain. The eastern boundary is formed by the Nevada County line and the western edges of New Bullards Bar Reservoir. The northern

YUBA COUNTY

Legend:

- 1** CLIPPERMILLS FIRE DISTRICT
- 2** CAMPTONVILLE-MOONSHINE FIRE DISTRICT
- 3** FOOTHILL FIRE DISTRICT
- 4** DOBBINS-OREGON HOUSE FIRE DISTRICT
- 5** LOMA RICA-BROWNS VALLEY COMMUNITY SERVICES DISTRICT
- 6** DISTRICT 10-HALLWOOD COMMUNITY SERVICES DISTRICT
- 7** SMARTVILLE FIRE DISTRICT
- 8** LINDA FIRE DISTRICT
- 9** OLIVEHURST PUBLIC UTILITY DISTRICT (OPUD)
- 10** PLUMAS-BROPHY FIRE DISTRICT



SOURCE: Yuba County Local Agency Formation Commission



boundary steps to the north of Lake Mildred and about two miles north of Clark Hill. In the west, the District extends to the vicinities of Donovan and Stanfield hills west of Collins Lake (Figure 9-1).

The Camptonville-Moonshine District maintains a volunteer fire station at Camptonville. As noted above, CDF provides dispatching services for this District through a contract arrangement. Yuba County contributes to the maintenance of the repeater station for this dispatching network. The western limits of the District are generally along the western edges of New Bullards Bar Reservoir. On the north, the District extends to the North Yuba River. The eastern boundary is the Sierra County line, and the southern boundary is along the Nevada County line (Figure 9-1).

The District 10-Hallwood Community Services District (CSD) includes lands north of the incorporated limits of Marysville up to the Butte County line. As shown on Figure 9-1, the Feather River forms the western boundary and Mathews Lane and Ramirez Road form the eastern District boundary. In the southern portions of the District, the boundary extends eastward to encompass the community of Hallwood. The District 10-Hallwood CSD contracts for fire protection with the City of Marysville Fire Department. As noted above, Yuba County contributes to this service by providing dispatching services through the Yuba County Sheriff's Office.

The Foothill Fire Protection District encompasses the communities of Woodleaf, Forbestown, Rackerby, Brownsville, and Challenge. Very generally, District boundaries are the Butte County line to the north and west, the western edges of New Bullards Bar Reservoir, a north-south line running about two miles east of Challenge, and a stepped line to the south that stops north of Lake Mildred and Clark Hill (Figure 9-1). This District is served by an all volunteer fire department that operates from Brownsville. It is one of the districts that receives dispatching services from CDF. In addition to fire protection, the District provides emergency rescue service. A separate entity, the Foothill Volunteer Fire Department Auxiliary, owns five acres of land adjacent to the fire station. At the time, there are no plans to develop this land. The FHFPD has an agreement with the Yuba County Public Works Department to provide covered parking for the County's snow removal equipment during the winter. The FHVFD Auxiliary permits storage of road sanding materials used by County crews. The agreement between the FHFPD and the County was due for renewal in 1993.



The Loma Rica - Browns Valley Community Services District (CDS) is a volunteer department with 16 volunteer firefighters and emergency response personnel. This CSD has two pre-1970 fire engines and one 1992 water tender. This equipment is parked at various residences within the service area. Construction of a fire station on Brown's Valley School Road has been approved and should be completed during 1994. The CSD also contract with CDF for dispatching services and fire engine coverage at the Loma Rica CDF Station during the non-wildland fire season. This coverage provides for one CDF engine with a minimum of one CDF operator 24 hours per day. This service also includes training for the volunteer firefighters by CDF. The eastern boundary of this CSD is roughly formed by Sicard Flat Road, Scott Forbes Road, and a line extending south from Daugherty Hill. The southern boundary is generally formed by the Yuba River and a stretch of State Highway 20. On the west, the District is bounded by Mathews Lane and Ramirez Road, and on the north, by a line going northwestward from Daugherty Hill and then west-southwest along a stretch of Honcut Creek at the Butte County line (Figure 9-1).

The Smartville Fire Protection District maintains the Smartville fire station in the community of Smartville. This is a volunteer fire department with six volunteer firefighters, two engines, one water tender, and one rescue squad. The District contracts with CDF for dispatching services. The eastern District boundary is the Nevada County line. This boundary is about 12 miles from north to south. The District, as shown on Figure 9-1, progressively narrows from north to south, forming a somewhat triangular configuration with its base in the east and a narrow "tip" in the west, about two miles west of Hammonton.

The area shown on Figure 9-1 as the Clipper Mills District has no official fire protection services. According to the Butte County Fire Department, this portion of the northeastern tip of Yuba County is adjacent to Butte County's Foothill Fire District. A receptionist at this District (pers. comm., October 1992) said that the so-called Clipper Mills District is not in the Foothill Fire District or any other fire district, but rather it is protected gratis by whichever district has available resources when a call for assistance is made.

Marysville Fire Department provides fire protection within City limits. As previously noted, the Marysville Fire Department also serves the District 10-Hallwood CSD under a contract with that District. The total area served by



the Department is about 68 square miles. The fire station is located at 107 9th Street east of downtown Marysville. The Department is staffed by 25 paid professional fire fighters on a 24-hour basis and operates eight vehicles. There are currently four fire fighters on each shift under the supervision of the Chief. Through a state grant and additional contributions from Yuba and Sutter counties, the Marysville Fire Department has also developed a hazardous materials emergency response team, the only such team in the two counties. The Department also provides basic life support emergency services but does not presently have paramedic capabilities (Marysville Medical Group and Yuba-Sutter Chamber of Commerce, *Yuba-Sutter Economic Profile*; QUAD Consultants 1992:37-38).

The City of Wheatland Fire Department is an all-volunteer organization, with a staff that varies from about 12 to 16 volunteers at any given time. Operations are directed by volunteer Fire Chief Carl Nichols. The Department operates four vehicles, including a rescue unit, a "brush truck," and one large pumping engine. The rescue unit and brush truck are used most often. The Department has a mutual response agreement with the Plumas-Brophy Fire District, so that the two departments cover virtually the same area when called. Hazardous materials emergencies are handled by the Marysville Fire Department under a mutual aid agreement (Monika Wall, City Administrator, City of Wheatland, pers. comm., August 1992).

The following information regarding CDF operations in Yuba County was provided by Buck Weckman, Dobbins CDF Battalion Chief (pers. comm., August 1992).

CDF fire protection is generally provided in the unincorporated foothill and rural portions of the county that fall within a State Responsibility Area (SRA)(Figure 9-2). Although their main responsibility is to fight wildland fires, during the fire season (roughly mid-May to mid-October), CDF responds to all fires, including structural fires. This is because structural fires can potentially evolve into wildland fires. During winter there is little danger of wildland fires. Consequently, during the fire off-season, operations are greatly curtailed. The CDF will respond to structural fires during the off-season with available personnel and equipment, but the level of protection is very limited in these rural areas by urban standards. While some of these rural stations have very little immediate backup strength locally, they are supported by a



State-wide CDF backup system that provides personnel and equipment from other areas as needed.

CDF has no formal Mutual Aid Agreements with the districts providing fire protection in Yuba County, except for the standard statewide mutual aid agreement that allows the districts and CDF to provide one another with mutual assistance. In practice, CDF and the districts cooperate continuously on an informal basis. The rationale is that any wildland fire can involve structures and any structural fire can spread to wildlands. Thus, there is a mutual understanding among the jurisdictions that the closest jurisdiction that is able to provide fire fighting resources will respond, and other jurisdictions will provide aid as needed. CDF and the U.S. Forest Service have a formal mutual aid agreement to use the closest fire suppression resources for first response, regardless of jurisdiction, within those areas covered under the agreement.

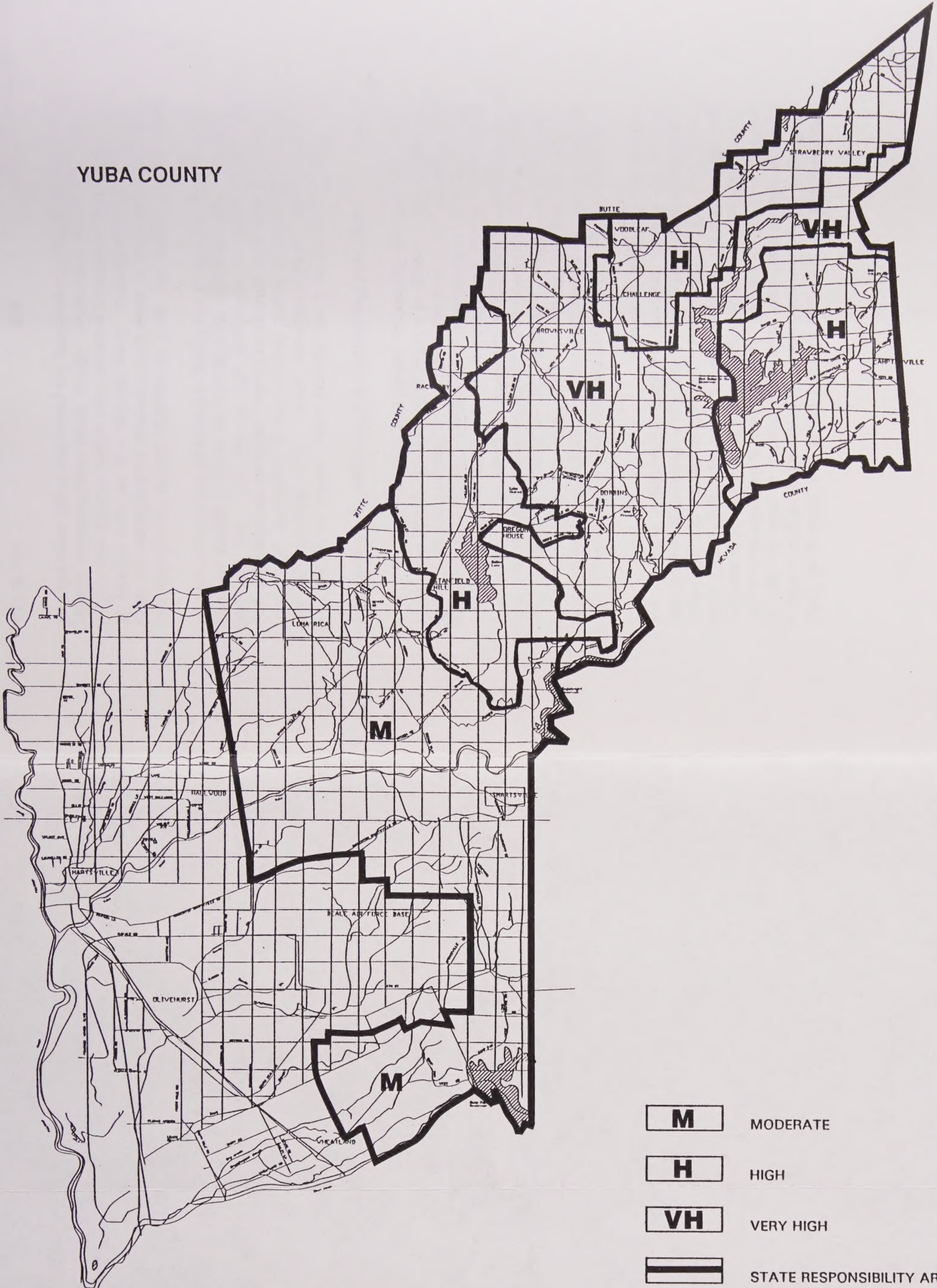
The CDF fire station in Loma Rica is a one engine station. During the fire season, it is staffed by three fire captains and four fire fighters. In the off-season, there are three to five persons staffing the station. At the Dobbins CDF fire station, there are two engines and a bulldozer unit. During fire season, staff includes a battalion chief, two fire captains, two fire apparatus engineers, two bulldozer operators, and seven fire fighters. In off-season, staff is reduced to about three to five persons. At the Smartville CDF station, there are two engines. Staff during fire season consists of a battalion chief, two fire captains, two fire apparatus engineers, and seven fire fighters. In off-season, this staff is also reduced to three to five persons.

CDF also is available for additional fire protection service, by contract, during the non-wildland fire season. This service could include dispatching, engine staffing, and training. Currently, engine staffing and dispatching services are utilized by contract at the Loma Rica station.

9.2.1.1 Maintenance of Adequate Staffing Ratios and ISO Fire Insurance Ratings

Unlike law enforcement, specific standards for staffing of rural fire agencies rarely exist. For example, State guidelines and regulations governing fire protection do not address staffing ratios (CDF 1980; California Board of Forestry 1991). Similarly, the *Seismic Safety and*

YUBA COUNTY



- M** MODERATE
- H** HIGH
- VH** VERY HIGH
- STATE RESPONSIBILITY AREA



Source: Fire Prevention Bureau,
Department of Forestry and
Fire Protection



Safety Elements of the *Yuba County General Plan* (County of Yuba 1980) have no staffing guidelines. Each agency is unique, having a differing mix of paid and volunteer personnel as well the type of property requiring protection. As growth occurs, fire protection service in Yuba County will decline without means to fund expanded services. It is unlikely that the increases in property assessments alone will cover future costs. The impact new development has on fire protection capability must be carefully weighed to assure that service levels do not decline for existing property and that unreasonable risks are not created for developing properties.

One method of measuring overall fire protection capability is to utilize the ISO (Insurance Service Organization) rating system. The ISO uses a Fire Suppression Rating Schedule with ten public protection classifications. Class 1 receives the most rate recognition (i.e., insurance rates are lower) and Class 10 receives no recognition. The Fire Suppression Rating Schedule defines different levels of public fire suppression capabilities, which are reflected in the individual property fire insurance rate establishment procedures. The present ISO rating for Marysville is 4. Linda has a rating of 6, Olivehurst is rated 5, while Wheatland has a rating of 6 (Marysville Medical Group and Yuba-Sutter Chamber of Commerce, *Yuba-Sutter Economic Profile*).

9.2.1.2 Future of Fire Districts and Volunteer Fire Departments

As Yuba County grows it will become more difficult to provide fire protection with strictly voluntary forces. With increasing liability exposure, greater fire hazard from structures in addition to wildland fires, and demands for emergency medical response and other services, extensive training of volunteers will be required. The cost and difficulty in providing such training must be weighed against the costs and potential benefits of employing professional full time personnel.

With growth comes the need to examine district boundaries and Spheres of Influence to determine if present arrangements are most efficient and cost-effective. Some districts may be more capable of responding to development pressures than others and this may lead to a desire to adjust boundaries. Other future considerations include consolidation of districts providing fire protection or the assumption of



fire protection directly by the County. If consolidation occurs, or if the County forms a centralized fire department, contract services with CDF should be examined in the context of cost-efficiency.

9.2.1.3 Relationships Among City Fire Departments, Beale Air Force Base, CDF and National Forest

Yuba County presently has nine separate districts providing fire protection in unincorporated areas, along with fire departments in the two incorporated cities. At present, the cities and the surrounding districts have a close working relationship, including joint dispatch and/or mutual response agreements. The City of Marysville provides fire protection to the District 10-Hallwood CSD. The Wheatland Volunteer Fire Department has a mutual response agreement with the Plumas-Brophy Fire District. The County provides dispatching services to the City of Marysville for calls in the District 10-Hallwood CSD. Also, the County contributes funds to the City of Marysville Fire Department to provide the County with hazmat response capabilities.

The districts providing fire protection within Yuba County (as opposed to the County government *per se*) have general mutual assistance agreements with fire protection authorities at Beale AFB. Additionally, hospitals in the county have mutual assistance agreements with Beale AFB for medical services in the event of emergency conditions. The County and Beale AFB have a quasi-official understanding to provide mutual assistance in the event of a major flood or other disaster. For example, the base housed hundreds of evacuees during the 1986 floods. The County and Beale AFB maintain excellent and mutually beneficial relationships with regard to emergency services, and they conduct joint training and preparedness operations (Purdom, pers. comm., August 1992).

The U.S. Forest Service (USFS) operates more independently of the County than CDF with respect to fire protection on federal lands within Yuba County. Portions of both the Plumas and Tahoe National Forests occupy the county. However, the USFS informally cooperates with the fire districts within the county when called, based on immediate needs. Also, the USFS and CDF have formal mutual assistance agreements, to which the County is a *de facto* party through



its agreements with CDF. Thus, although fire protection cooperation between the County and the USFS is largely indirect or informal, there is, nevertheless, a certain level of mutual assistance and cooperation (Purdom, pers. comm., August 1992).

There are two levels of mutual assistance agreements among the various districts providing fire protection within Yuba County. All districts are parties to the statewide Mutual Aid Master Agreement, and all fire departments and districts under the agreement (virtually all departments and districts within the state) are obligated to provide assistance upon request, based on the availability of resources to assist. Additionally, some of the districts have explicit Automatic Aid Agreements with adjacent districts, such as the agreement between the Wheatland Volunteer Fire Department and the Plumas-Brophy Fire District. These agreements call for border to border automatic mutual response to all structural fires as well as other assistance by request (Purdom, pers. comm., September 1992).

9.2.1.4 Peak-load Water Supply Requirements

Rural Areas. In order to have effective fire suppression capability, it is necessary to have an adequate and reliable supply of water. Due to the rural character of the county, water frequently must be hauled to the site by tanker. Outside urban areas, there is a general lack of hydrants, although some areas have piped water from community water systems. For most unincorporated areas of the county, individual subdivisions and isolated structures must supply their own water for fire protection. The 1980 *Seismic Safety and Safety Elements* of the *Yuba County General Plan* recommended the following policies with respect to fire suppression water supplies:

County should require water supply to new residences. Where no piped water supply is available, each parcel (should) be provided with a 2,000 gallon capacity, that standard valves be used and that outlets be within eight feet of a firm road surface. The water supply may serve more than one site, with the storage capacity adjusted according to the number of sites. A variety of tanks,



including in-ground swimming pools and local ponds are accepted (County of Yuba 1980:43).

Regulations adopted by the County in 1991 under the State Board of Forestry's SRA Fire Safe Regulations (see following section) established additional emergency water standards for wildfire protection. The general standards for such water supply systems are as follows:

Water systems that meet or exceed the standards specified in Public Utilities Commission of California (PUC) revised General Order #103, adopted June 12, 1956 (Corrected September 7, 1983, Decision 83-09-001), Section VIII Fire Protection Standards and other applicable sections relating to fire protection water delivery systems, static water systems equaling or exceeding the National Fire Protection Association (NFPA) Standard 1231, "Standard on Water Supplies for Suburban and Rural Fire Fighting," 1989 Edition, or mobile water systems that meet the Insurance Services Office (ISO) Rural Class 8, 2nd Edition 3-80 standard shall be accepted as meeting the requirements of this article. These documents are available at CDF Ranger Unit Headquarters (California Board of Forestry 1991:11).

According to Buck Weckman (Battalion Chief, CDF Dobbins, pers. comm., August 1992), CDF draws water from ponds, lakes, and forebays or reservoirs associated with hydroelectric or hydraulic systems. During fire season, CDF hires water tenders to provide a mobile water supply.

Many of the individual districts providing fire protection have agreements with the various water supply districts and agencies within the county to provide pressurized water for fire hydrants (Purdom, pers. comm., September 1992). Whether these water supply arrangements presently meet all requirements of the *General Plan Seismic Safety and Safety Elements* (County of Yuba 1980) and/or the California Board of Forestry standards recently adopted by the County



is problematical. Many rural counties in California have system deficiencies, partly due to the fact that many communities and residential developments were in place before the most current standards were adopted. Thus, it is to be expected that some areas of the county will have to be retro-fitted with peak-load water supplies and water delivery systems to bring them up to current standards. In order to properly address the subject of peak-load water supply, the *General Plan* should reinforce present standards for new development and should establish clear policy concerning the location of growth, with the adequacy of water systems for fire suppression purposes factored into the decision. Means must also be identified in the *General Plan* for the upgrading of water systems that will be impacted by growth. These *General Plan* goals, policies, and standards should conform with the California Board of Forestry standards.

Urban Areas. Within urban areas of the county that are served by regulated water utility providers, California Public Utilities Commission guidelines (PUC Rules 15 and 103) require that the water provider design its distribution system meet the peak fire flow requirements of the local fire protection agency. Thus, for example, the California Water Service Company (CWSC), which supplies water to the City of Marysville from a system of 13 wells, has structured its system to meet the peak fire flow requirements of the Marysville Fire Department (CWSC 1990). For a more complete description of the CWSC system, please see Section 13.6.1.

Peak fire flows, as required under PUC rules and CDF firesafe guidelines, are generally sufficient to meet all domestic supply requirements in most water districts. This is because under PUC Rule 103, the water system must be capable of maintaining fire flow for at least two hours in addition to maximum daily domestic demand (CWSC 1990).

Publicly-owned, as opposed to privately-owned, water supply systems and mutuals, are not directly regulated by the PUC. Public systems, such as the OPUD and the City of Wheatland water systems, adopt their own peak-load fire flow requirements. However, new developments within County jurisdiction that seek to connect to public water systems must meet County fire standards for water supply, which



incorporate State Board of Forestry Fire Safe Regulations that, in turn, are based on PUC Rule 103 standards. Furthermore, the directors of public water systems often explicitly adopt PUC Rule 103 standards or very similar standards.

The *Yuba County Subdivision Ordinance* provides the following with respect to water supply for fire protection. Section 11.15.630(c)(1), Improvements Required, states that the subdivider shall provide the following: "All subdivisions requiring a final map which lie within the boundaries of a water serving entity shall provide adequate water supply for each lot in the subdivision and for fire protection to the area through mains and hydrants." Section 11.15.681, Water Systems, states that all water distribution systems within the limits of existing water district boundaries shall be constructed to the standards required by that district, and "All subdivisions requiring a final map which lie within the boundaries of a water serving entity shall provide adequate water supply for each lot in the subdivision and for fire protection to the area through mains and hydrants." As discussed below, Yuba County has adopted fire safety standards, including peak load water supply requirements, of the Board of Forestry's SRA Fire Safe Regulations.

In the City of Wheatland, the publicly-owned water supply system consists of three wells and a 100,000 gallon elevated storage tank. One function of the storage tank is to provide peak fire flow capacity as required by the Wheatland fire protection agency. In planning to accommodate projected growth in the City through the year 1995, the City of Wheatland has recommended that all portions of the City should be interconnected with two or more water mains to ensure both adequate domestic supply and adequate fire flow. Alternative power sources to pump water have also been recommended. In order to sustain sufficient peak fire flow for two hours, both tank storage and well flows must be combined. Design criteria for water systems in newly developing areas of Wheatland are those that are recommended by California PUC Rule 103. These criteria are intended to provide minimum hydrant pressure of 20 pounds per square inch (psi) for two hours (City of Wheatland 1990). OPUD, another public water system, also has standards designed to meet peak load requirements for fire protection.



9.2.1.5 Fire Safety-Related Land Use Planning

Many Yuba County residential communities are located in areas of extreme fire hazard, including Smartville, Dobbins, Browns Valley, Loma Rica, Brownsville, and Challenge. Many recreational destinations in Yuba County are in extreme fire hazard areas and are reached via scenic roads that wind through dry foothill and mountain vegetation. It is considered essential that homes not be developed at the terminus of long, dead-end roads. It is both difficult for residents to escape such roads and emergency equipment to reach their homes in the event of wildland fires.

Any proposed development in extreme or high fire hazard areas should be carefully reviewed by the County and the appropriate fire protection provider to assure that overall fire hazard is reduced through appropriate fire prevention and protection requirements.

The State *General Plan Guidelines* recommend the following planning standards be applied to areas with wildland fire potential:

- Access and Evacuation Routes: There should be sufficient access for emergency vehicles and for evacuation of residents. Two or more routes of access should be provided, preferably on different sides of the development.
- Road and Structural Identification: All roads in wildland fire areas should be well marked and homes should have addresses in plain view.
- Roadway Widths: Roadways should allow for two-way traffic with room for parking on at least one side.
- Water Supply: There should be sufficient water supply for fire suppression units in the event of a wildland fire.

Although these standards may be useful as guidelines, the new SRA Fire Safe Regulations are much more specific and apply to all new



development in the SRA, which generally includes all high fire hazard areas in Yuba County (see below).

The existing *Seismic Safety and Safety Elements* of the *Yuba County General Plan* (County of Yuba 1980:41-43) contain policies designed to improve fire safety. These include adoption of the Uniform Fire Code and designation of the foothills and mountains as hazardous fire areas. The Uniform Fire Code gives local fire chiefs broad powers to regulate hazardous fire area uses, for example, bans on outdoor burning, requirements to clear brush and other fuels from around structures. Fire chiefs may also close areas to the public during periods of extreme fire danger and prohibit smoking, bonfires, the use of motorcycles and other vehicles. Violators of these restrictions may be charged with the costs of fighting fires they cause. These powers, held by the County, complement similar powers of the CDF in its areas of responsibility.

Another aspect of fire planning provided for by the policies of the *Seismic Safety and Safety Elements* is access (County of Yuba 1980:42-43). Among these are policies for all new land divisions that require that dead end roads will not serve more than 10 lots and will be not more than 1,000 feet long; fire access roads must be 18 feet wide with three-foot shoulders on each side; grade should not exceed 15 percent; inside radius of turns should not be less than 50 feet; all road surfaces and bridges shall be designed to sustain 35,000 pounds loading; neighborhoods shall have circulation plans adopted by the Board of Supervisors; and access to water storage areas for residential structures shall be provided.

In 1991, Yuba County petitioned the Board of Forestry for certification of the County's compliance with the Board's SRA Fire Regulations, PRC 4290 – Title 14 California Code of Regulations (California Board of Forestry 1991). All counties in California were required in 1991 to adopt local fire safety regulations that meet these standards. In effect, these regulations made earlier fire safety advisory guidelines of the CDF mandatory for local governments.



9.2.2 Fire Hazards

9.2.2.1 Wildland Fires and High Fire Risk Areas

Most of the following discussion derives from the *Yuba County General Plan Seismic Safety and Safety Elements* (County of Yuba 1980).

The combination of weather, topography, and vegetation in the unincorporated rural portions of the county creates very hazardous fire conditions. The fire hazard is greatest in the foothill and mountain areas and lowest in cultivated fields within the Central Valley. Under the Fire Hazard Severity Rating System of the California Department of Forestry, nearly all foothill and mountain areas are designated as having significant fire hazards. With the exception of grasslands, nearly all of the county's mountainous lands that are not in the very high classification are rated as high fire hazard areas. No rural portions of the county are given a low fire hazard rating.

Since most fires are started by people (relatively few being the result of lightning strikes or other natural phenomena), the areas of greatest concern are where people live, drive, recreate, or work. Fires have the potential to spread very rapidly due to the dry vegetation, rugged topography, and in fire season, hot, dry winds. These fires can potentially result in disastrous loss of life and property.

The high and very high fire hazard areas coincide to the regions under CDF and Forest Service jurisdiction. There is great risk when people choose to live in these areas in large numbers. Despite this risk, such areas are typically viewed as attractive places to reside. It is very important that the fire risk and planning for fire safety play an important role when considering residential development in such areas. To this end the State Board of Forestry promulgated Fire Safe Regulations that apply to the State's area of responsibility and that require certain minimum fire safety measures. As stated above in Section 9.2.1.5, Yuba County implemented these regulations in 1991 to comply with state law. In addition, because Yuba County contains State Responsibility Area (SRA) within its boundaries, the draft *Safety Element* of the General Plan must be submitted to the State Board of Forestry for review and comment when it is updated.



Fire hazard severity zones have been mapped for the State Responsibility Area within Yuba County and the county in general (Figure 9-2). Fire hazard severity zones are intended to show relatively homogeneous areas and are based on fuel loading, slope, fire weather and other factors. The lower grassland areas adjacent to the Valley floor have a rating of "moderate." Adjacent lands to the east, typically characterized by steeper slopes and chaparral, carry a "high" rating, while more heavily forested lands adjacent to and within the Plumas and Tahoe National Forests have a "very high" rating. The map indicates that the most fire secure areas are in the lower grasslands and the Central Valley portions of the county.

Outside the SRA, risks are more typical in nature and do not pose any unusual constraints to development, assuming that adequate fire service is in place and that standards for development take fire safety into consideration.

A considerable amount of agricultural burning (i.e., rice stubble) occurs in Yuba County on the Valley floor. However, such burning is closely controlled to assure that it poses no unusual risk. Also, rice stubble burning in the Sacramento Valley Air Basin is to be substantially reduced during the next decade under provisions of Assembly Bill No. 1378, adopted in October 1991 (Section 3.2.2).

In addition to threats to life and property, wildland fires threaten scenic settings, wildlife, and wildlife habitat. Loss of vegetation from fires can contribute to erosion, mud slides, and increased sediment loads in waterways and reservoirs.

Factors most affecting wildland fires are vegetation, climate, and topography. These factors are used by the CDF to develop the Fire Hazard Severity Scale for California wildlands. The resulting classification system provides a practical, objective means for delineating areas of varying fire hazard severity.

To a fire, vegetation is fuel. Three vegetation categories are recognized in terms of fuel capacity: grass, brush, and timberland. Grasslands, the lightest fuel group, provide from one to three tons of fuel per acre and are easily ignited when dry. Of the three fuel types,



grasslands are the easiest in which to suppress fires. Heavy brush and timberlands represent the heaviest fuel loading. Those areas with vegetation six or more feet high can produce from 30 to over 100 tons of fuel per acre. Scrub oak and chaparral vegetation (usually dominated by manzanita, ceanothus, and chamise) cover vast areas of the foothills. Previously forested areas that were logged are often covered with dense chaparral formations. Areas forested with yellow pine, Douglas fir, white fir, sugar pine, and incense cedar occur on the higher Sierran slopes and represent the heaviest fuel loading conditions. Agricultural areas on the Valley floor are the least fire-prone areas of the county. The most serious fire problems in the Valley relate to structural fires and grass fires.

While vegetation provides fuel for fires, the Mediterranean climate of Yuba County helps fires to start and spread rapidly. During the annual dry season, from about May to October, vegetation becomes very dry. Hot, dry conditions increase the combustibility of fuels. Of all fires in California that burned 300 or more acres between 1959 and 1969, about 75 percent occurred in areas that experience 9.5 or more days classified by the CDF as critical fire weather days (based on heat and humidity) during an average year. All of Yuba County falls either into Class II (1 to 9.5 days of critical fire weather per year) or Class III (more than 9.5 critical fire weather days per year). Although the Valley has a hotter, drier climate than the foothills and mountains, the presence of croplands, orchards, and irrigation makes the fire danger less critical in the valley. Although winds are not considered in the CDF's classification system, winds feed oxygen to fires, push the flames and embers to new areas, and contribute to fire brand fallout and fire blowup conditions (i.e., conditions commonly called "fire storms").

The third component of the fire hazard rating system is topography. Steepness of terrain can contribute to the outbreak, spread, and severity of fires in several ways. On south-facing slopes, steep topography affects the angle at which the sun's rays strike the ground and can produce severe conditions of high temperature and dryness as compared to flat land. Once fire has started in steep terrain, fuel is made easily available by the fact that plant material is generally above the flames where it preheats and ignites quickly and easily. Steep hills can also contribute to wind patterns that increase the speed of fire



spread, and fire suppression is more difficult in such terrain. Often, the only access to these areas is by air.

As shown on Figure 9-2 the three factors of fuel loading, critical fire weather, and steepness contribute to the designation of most foothill and mountain areas of the county as high fire hazard areas.

9.2.2.2 Urban Areas

Although grasslands fires are a concern within urban areas, the greatest fire threat is structural fires. Structural fires are a greater threat to life and property than wildland fires. Much of our time is spent in homes, offices, stores, and factories. Most structural fires are caused by negligence, although arson is also a cause.

Among the five ways to reduce structural fire hazards are:

- improving fire safety technology
- changing the types of materials used in structures
- changing building design and construction
- changing code regulation and enforcement
- adding automatic fire detection and suppression devices

Sealed windows that are now common in newer (and some older) structures are helpful in increasing heating and air conditioner efficiency. However, these windows can seal in heat and hot gases during a fire making it more hazardous for people inside as well as more difficult to escape.

Although they are not urban *per se*, communities in the foothill areas of the county are at greater risk, since they not only share the fire hazards of urban structures (i.e., human negligence, electrical fires, arson), but they are located in areas more subject to wildland fires. Fire hazards to structures in these areas can be reduced through use of fire-resistant building materials, particularly on exterior walls and roofs, and adequate brush clearance to reduce fuel loading around structures.



Four codes of regulations govern fire safety in structures:

- Building Code – applies mainly to new construction and alterations
- Fire Prevention Code – governs maintenance of buildings after construction and introduction of materials into the building in relation to fire safety
- Electrical Code – sets standards for materials and equipment used in electrical systems
- Mechanical Code – applies to heating, ventilation, and air conditioning

Yuba County has adopted the most recent versions of the above classes of codes, including the Uniform Fire Code (Rick Helman, Senior Planner, Yuba County Planning and Building Services Department, pers. comm., October 1992).



SECTION TEN POPULATION



SECTION TEN POPULATION

The 1990 Census reported that 58,228 people reside in Yuba County, an increase of 16 percent over the 1980 Census population figure of 49,733. This increase works out to an annual average growth rate of 1.75 percent for the ten-year period. Historical population figures for Yuba County and the cities of Marysville and Wheatland are presented in Table 10-1, and 1990 Census information for Yuba County communities is presented in Table 10-2. The two incorporated cities in Yuba County, Marysville and Wheatland, have experienced 24.5 percent and 10.6 percent growth rates, respectively, over the 10-year period. Information on households and household type is presented in Tables 10-3 and 10-4.

According to the 1990 Census, the ethnic composition of Yuba County is 78.2 percent white; 4.2 percent Black; 8.4 percent Asian and Pacific Islander; 2.9 percent American Indian, Eskimo and Aleut; and 11.6 percent Hispanic (total is greater than 100 percent because Hispanic origin applies to other categories).

The age distribution of the population, for both the total county and the unincorporated area, is presented in Tables 10-5 and 10-6 respectively. This information indicates that the percentages of population in each age group (or "cohort") have remained fairly stable over the last twenty years. Information on the age of population is useful in that it provides an indication of the types of services that may be required (e.g. schools, health care facilities and services, senior services) and the preferred lifestyle or housing accommodations (single family vs. multiple family dwelling, ownership vs. rental housing, etc.).

A range of population projections has been developed for Yuba County, based on differing estimated rates of population increase. Table 10-7 presents population projections through 2010 developed by SACOG, which forecast an annual average growth rate of .83 percent, for a total county population of 66,600 by 2010. Table 10-8 presents projections developed by Yuba County based on private industry estimates. Using an annual average growth rate of 3.75 percent, the 2010 population forecast for the county is 121,512.



TABLE 10-1
POPULATION IN YUBA COUNTY
1900-1990

Year	Jurisdiction			
	Yuba County (Total)	Marysville	Wheatland	Unincorporated Area
1900	8,620	3,991	492	4,137
1910	10,042	5,430	481	4,131
1920	10,375	5,461	435	4,479
1930	11,331	5,763	479	5,089
1940	17,034	6,646	496	9,892
1950	24,420	7,826	581	16,013
1960	33,859	9,553	813	23,493
1970	44,736	9,353	1,280	34,103
1980	49,733	9,898	1,474	38,361
1990	58,228	12,324	1,631	44,273

Source: 1990 U.S. Decennial Census, from Yuba County Housing Element.



TABLE 10-2
CENSUS DATA FOR UNINCORPORATED COMMUNITIES¹

	Community				
	Beale AFB	Challenge-Brownsville	Linda	Loma Rica	Olivehurst
Population	6,912	1,096	13,033	1,852	9,738
Households	1,818		3,783	647	3,166
Persons per Household	3.36	2.36	3.16	2.85	3.07
Housing					
Single family dwellings	1,464	294	2,513	445	2,460
2-4 units	117	3	468	2	144
5+ units	115	0	702	0	197
Mobilehomes	145	222	540	236	546
Group Quarters	810	6	270	8	25
% Renter	91.7	21.3	56.6	11.2	35.2
Vacancy Rate (%)	2.05	12.36	6.14	5.55	6.14
Ethnicity (%)					
White ²	73.1	94.5	66.0	92.0	79.2
Black	14.7	1.0	3.0	0.7	2.5
Indian	0.8	3.0	2.6	5.7	4.9
Asian	7.4	0.1	20.9	0.8	5.3
Other	4.0	1.0	7.5	0.8	8.1

¹ Census Designated Places with population $\geq$ 1,000

² Includes Spanish origin

Source: 1990 U.S. Census, from Yuba County Housing Element



TABLE 10-3
HOUSEHOLDS BY HOUSEHOLD TYPE: 1990

Type of Household	Number of Households	
	Yuba County	Yuba County Uninc.
Male Householder, no spouse, w/children	535	407
Male Householder, no spouse, w/o children	276	193
Female Householder, no spouse, w/children	1,953	1,363
Female Householder, no spouse, w/o children	584	394
Married Couple Family w/children	6,097	4,931
Married Couple Family w/o children	5,433	4,155
Nonfamily household	4,898	2,930
Total	19,776	14,373

Source: SACOG: 1990 Census of Population and Housing, from Yuba County Housing Element.



TABLE 10-4
PERSONS BY HOUSEHOLD TYPE: 1990

	Yuba County	Percent	Yuba County Uninc.	Percent
Family Households				
Householder	14,878	25.6	11,443	25.8
Spouse	11,530	19.8	9,086	20.5
Other Relatives ¹	22,383	38.4	17,709	40.0
Non-Relatives ²	1,456	2.5	1,079	2.5
Subtotal	50,247	86.3	39,317	88.8
Non-Family Households				
Male households	2,401	4.1	1,509	3.4
Female households	2,497	4.3	1,421	3.2
Non-relative ²	1,135	2.0	718	1.6
Subtotal	6,033	10.4	3,648	8.2
Group Quarters	1,948	3.3	1,308	3.0
TOTAL	58,228	100.0	44,273	100.0

¹ Relatives include householder, spouse and the questionnaire categories: "son/daughter, brother/sister, father/mother and all "other relatives." Tabulations of "other relatives" include all categories not shown separately in the matrix.

² "Non-relatives" include the questionnaire categories: "roomer, boarder, partner, roommate, paid employee, and other non-relative". Tabulations of "non-relatives" include all categories not shown separately in the matrix.

Source: SACOG, 1990 Census of Population: Characteristics of Households and Families, from Yuba County Housing Element.



TABLE 10-5
YUBA COUNTY AGE DISTRIBUTION: 1970, 1980, & 1990

Age Group	1970		1980		1990	
	Number	Percent	Number	Percent	Number	Percent
0-4	4,372	9.8	4,536	9.1	6,027	10.4
5-14	10,381	23.2	8,056	16.2	10,078	17.3
15-24	8,521	19.1	10,133	20.4	8,581	14.7
25-34	6,371	14.2	8,466	17.9	10,094	17.3
35-44	5,276	11.8	5,364	10.8	7,592	13.0
45-54	3,850	8.6	4,322	8.7	5,106	8.8
55-64	3,012	6.7	4,235	8.5	4,598	7.9
65+	2,963	6.6	4,621	9.3	6,152	10.6
TOTAL	44,736	100.0	49,733	100.0	58,228	100.0

Source: SACOG, *1990 and 1980 Census of Population - Characteristics of Persons*; U.S. Bureau of the Census, *1970 Census of Population and Housing, General Population Characteristics*, from Yuba County Housing Element.



TABLE 10-6
YUBA COUNTY UNINCORPORATED AREA AGE DISTRIBUTION
1980 AND 1990

Age Group	1980		1990	
	Number	Percent	Number	Percent
0-4	3,742	9.8	4,776	10.8
5-14	6,562	17.1	8,040	18.1
15-24	7,952	20.7	6,638	15.0
25-34	6,506	17.0	7,604	17.1
35-44	4,276	11.1	5,706	12.9
45-54	3,148	8.2	3,885	8.8
55-64	3,046	7.9	3,433	7.8
65+	3,128	8.2	4,191	9.5
TOTAL	38,361	100.0	44,273	100.0

Source: SACOG, *1990 and 1980 Census of Population and Housing*, from Yuba County Housing Element



**TABLE 10-7
POPULATION PROJECTIONS
BASED ON SACOG ESTIMATES**

Jurisdiction	Population by Year			
	Yuba County	Marysville	Wheatland	Unincorporated
1990 ¹	58,228	12,324	1,631	44,273
1995	60,700	11,648	2,128	46,924
2000	63,200	11,804	2,223	49,173
2005	64,900	11,704	2,234	50,962
2010	66,600	11,552	2,314	52,734
% Change Avg. Annual Growth Rate	.83	.11	1.12	.99

¹ Actual from Census

Source: SACOG Population Module, from Yuba County Housing Element.



TABLE 10-8
POPULATION PROJECTIONS BASED ON A 3.75 PERCENT
AVERAGE ANNUAL PRIVATE INDUSTRY
ESTIMATED GROWTH RATE

Year	Percent	Jurisdiction			
		Yuba County		Marysville	Wheatland
		Total	Unincorporated		
1990		58,228	44,273	12,324	1,631
1995	3%	67,502	51,325	14,287	1,890
2000	5%	86,152	65,505	18,234	2,413
2005	4%	104,817	79,700	22,184	2,933
2010	3%	121,512	92,392	25,717	3,403

Source: Yuba County Housing Element



SECTION ELEVEN HOUSING



SECTION ELEVEN HOUSING

The *Yuba County Housing Element* was adopted by Yuba County in 1991. State law requires the *Housing Element* to address the following issues and topics:

- An assessment of housing needs and an inventory of resources and constraints relevant to meeting those needs;
- A statement of the County's goals, quantified objectives and policies relative to the maintenance, improvement and development of housing; and
- A program that sets forth a five year schedule of actions the local government is undertaking or intends to undertake to implement the policies and achieve the goals and objectives of the *Housing Element*.

In complying with State law, the *Housing Element* becomes the County's central policy statement and overall action program directed at facilitating the provision of safe, decent and sanitary housing for all economic segments of the community.

The planning time frame for the *Housing Element* is 1991-1996. State law provides that housing elements cover five-year periods and establishes deadlines for their adoption. Therefore, the *Housing Element* planning horizon is much shorter than that for the remainder of the *General Plan*, which is 1993-2013, and the *Housing Element* will be updated in 1996.

11.1 HOUSING PROFILE

Income and Affordability

Incomes and the cost of housing are increasing in the Yuba/Sutter area. According to the 1980 Census, the median home value in Yuba County was \$44,500. This was 3.24 times the median Yuba County family income of \$13,751. The Sutter-Yuba Board of Realtors' inventory of multiple listings revealed the median home value in Yuba and Sutter Counties to be \$98,000



for 1990. This was 3.33 times the median family income of \$29,400 in Yuba County.

Available Land

The 1985 *Housing Element* identified 4,240 acres of land zoned at densities from one unit per acre to 29 units per acre which could accommodate nearly 10,000 new dwelling units. However, much of this land was considered constrained from development by drainage problems or the capacity limits of the public utility districts providing sewage treatment in the Linda and Olivehurst communities.

Between 1985 and 1990, Yuba County rezoned land to accommodate an additional 16,321 new dwelling units. The capacity and drainage constraints previously identified in 1985 are being addressed through a variety of actions, including the *South Yuba Drainage Master Plan*.

Existing Housing

The 1990 Census reported 21,245 housing units in the county of which 93 percent were occupied. In contrast, the 1980 Census reported 19,093 housing units in the county of which 91.7 percent were occupied. Housing units in the unincorporated area totaled 16,320 in 1990 and 13,747 in 1980. Of the 1990 households, 47.26 percent were renters and 52.8 percent were owners. The 1990 SACOG Housing Module also indicated that 85.5 percent of the housing countywide was ten or more years old, and 84.9 percent within the unincorporated portion of the county.

The Sacramento Area Council of Governments (SACOG) prepared a *1990 Housing Module*, from which information is presented in Table 11-1. According to the *Housing Element*, the total number of dwelling units increased in every housing category, and the percentage of each dwelling unit type, as a share of the total number of dwelling units, also changed. Single family dwellings and multi-family dwellings of 2 to 4 units decreased their share of the total housing stock, while the share of multi-family units of 5 or more and mobilehomes increased. Over 97 percent of all the mobilehomes in Yuba County are in the unincorporated area.



11.2 HOUSING NEEDS

Yuba County conducted housing condition surveys of a sample of dwellings in various communities throughout the county in 1988 and 1991. The results are presented in the *Housing Element*. In 1988, 45 percent of the housing stock in the unincorporated area was classified as sound or standard, 44 percent in need of rehabilitation, and 11 percent dilapidated. The percentages for the communities of Linda and Olivehurst were similar.

The 1991 survey showed that 75 percent of the Linda and Olivehurst housing stock was sound, 19 percent in need of rehabilitation and 6 percent dilapidated. Although part of this change can be explained by a difference in survey methods, the County concluded that the primary reasons for the difference are the repair and demolition of dwelling units following the 1986 flood and the construction of several hundred new dwelling units in these communities. Overall, the *Housing Element* concludes that housing conditions in the unincorporated area have worsened since 1975, due largely to the increasing age of the housing stock.

According to the *Housing Element*, determining housing unit needs is accomplished by projecting future households, allowing for vacancies which provide for mobility within the rental and home ownership markets, and by including a number of new housing units sufficient to replace those projected to be lost to demolition. SACOG has estimated that, between 1989 and 1996, Yuba County should plan for 2,092 additional dwelling units in the unincorporated area. Table 11-2 summarizes the projected new housing units needed in the unincorporated area, and the land area required to accommodate these units.

11.3 RESIDENTIAL LAND RESOURCES

As Table 11-3 shows, there is a total existing development potential of land zoned for residential uses of over 82,900 dwelling units, which is a 16,300 unit increase over the 1985 *Housing Element* total development potential. Rural residential zoning of AE, A/RR and RRE account for 30,980 of these units. Although the type and level of constraint on this rural residential land has not been calculated, the *Housing Element* concludes that there is obviously a sufficient supply to meet any foreseeable demand for this type of very low density development.



In terms of urban residential zoning, the 49,672 dwelling unit capacity identified in Table 11-3 is not attainable without additional urban infrastructure such as sewage treatment capacity, water, circulation improvements and the resolution of drainage problems in the Linda-Olivehurst "urban area." As a consequence, both the Linda County Water District and the Olivehurst Public Utility District are taking steps to expand sewer and water facilities. Connection fees, special assessments, and community facilities districts will be utilized to finance facility construction which will add capacity.

A *Vacant Land Survey* completed in March 1991 by the Rural California Housing Corporation (RCHC) identified 179 acres of vacant land zoned for multi-family housing in the communities of Linda and Olivehurst. The vacant parcels identified in the survey are infill lots which are served by sewer and water. These parcels have a development capacity of 2,617 dwelling units upon buildout, which more than meets the residential land requirement identified on Table 11-2 for Low and Very Low Income residents.

In May 1990, the Yuba County Board of Supervisors adopted the *East Linda Specific Plan*. This 1,760 acre Plan contains 1,328 acres zoned for new residential development. The Plan will accommodate construction of 5,555 new dwellings, consisting of 983 high density units at 12 to 20 units per acre, 351 medium density units at 6 to 10 units per acre, and 4,221 low density units at up to 5 units per acre.

The *Yuba County Affordable Housing Study* prepared by Connerly and Associates, Inc. in July 1991 included a vacant land inventory and a constraints analysis. The Study, which is incorporated by reference as part of the *Housing Element*, concluded that there is currently enough vacant residentially zoned property in the Linda and Olivehurst communities alone to accommodate 150 percent of the Regional Needs Allocation for Yuba County, but that not all parcels are readily developable. A few parcels were found to be landlocked, without sewer or water, in an airport approach zone, in a flood zone and/or located adjacent to State Route 70, the Union Pacific Railroad, and commercial or industrial properties. After consideration of the constraints, the Study concluded that if the overall development of vacant parcels in Linda and Olivehurst occurs at an average of 60 to 70 percent of its maximum building capacity, there would still be an adequate land supply to meet the County's housing need allocations.



11.4 DEVELOPMENT CONSTRAINTS

The *Housing Element* identifies both governmental and nongovernmental constraints upon the maintenance, improvement, or development of housing for all income levels. "Governmental" constraints refer to land use controls, building codes and their enforcement, site improvement requirements, fees and other exactions, and local processing and permit procedures. The *Housing Element* concludes that the County imposes no unusual subdivision or site improvement standards, and that fees collected by the County to defray the costs of project review and processing are minimal. The amount of time taken to process development projects is also short in comparison to many jurisdictions. The lack of financial resources on the part of the County to implement housing improvement programs is noted.

Since preparation of the *Housing Element*, the County has adopted a Public Facilities Fees Program which is based on the *Yuba County Development Impact Fee Study* prepared by David M. Griffith and Associates (February 1992). The Public Facilities Fees Program establishes a fee to be paid at the point of building permit issuance, to cover the cost of a variety of public facilities. The fees can be several thousand dollars in amount and represent a governmental constraint not recognized by the *Housing Element*.

"Nongovernmental" constraints are defined as those elements that affect the housing market over which local government has no control. These include the cost and availability of construction and mortgage financing, land prices, and the cost of construction. According to the *Housing Element*:

Continued speculation and resale of unimproved subdivisions by developers has resulted in inflating the cost of land to the point where housing may become unaffordable for low and moderate income households. In order for these income groups to realize home ownership, housing density will need to be increased, unless local housing programs are developed that subsidize housing or land costs.



TABLE 11-1
HOUSING UNITS BY TYPE: 1975-1990
YUBA COUNTY UNINCORPORATED AREA

Dwelling Unit Type	Number of Dwelling Units						
	1975		1980		1990		1975-1990 Difference (%)
	No.	%	No.	%	No.	%	
Single Family	8,011	68.3	8,945	65.1	9,983	61.2	(7.1)
Multi-Family							
2-4 Units	1,043	8.9	1,153	8.4	1,273	7.8	(1.1)
5+ Units	714	6.1	925	6.7	1,161	7.1	1.0
Mobilehomes	1,965	16.7	2,726	19.8	3,903	23.9	7.2
Total	11,733	100.0%	13,747	100.0%	16,320	100.0%	

Source: SACOG Housing Modules: 1975, 1980, 1990



TABLE 11-2
SACOG REGIONAL HOUSING NEEDS ALLOCATIONS
RESIDENTIAL LAND REQUIREMENT: 7/1/90 TO 7/1/96

Unit Price Category	Number of Units	Typical Gross Density (unit/acre)	Land Area Required (acres)
Very Low	378	21	18
Low	234	14	17
Moderate	342	8	43
Above Moderate	840	4	210
Total	1,794¹		288

¹ No. units per year per income category for six years.

Source: Yuba County Housing Element



**TABLE 11-3
RESIDENTIAL DEVELOPMENT ZONES**

Rural Residential				
Zone	Minimum Parcel Size	Dwelling ^(a) Units/Acre	Acres	Potential Dwelling Units
AE	10-80 acres ^(b)	1/parcel ^(c)	117,570	3,408
A/RR	20,000 sq ft-40 acres	1/parcel ^(d)	125,090	25,018
RRE	1 acre	1/parcel ^(e)	3,408	2,557
RC	20,000 sq.ft ^(f)	1/parcel ^(g)	N/A	N/A
Urban Residential				
R-1 SP-1: R-.5 to R-6	6,000 sq ft - 2 acres	1/2-4.5 ^(h)	2,910	12,157
R-2 SP-1: R-6 to R-18	6,000 sq ft	6-17	1,798	29,815
R-3, SP-1: R-18 & R-20	6,000 sq ft	18-29	273	7,700
PR	1 acre	1 ⁽ⁱ⁾	0	0
PUD	Varies ⁽ⁱ⁾	Varies	N/A	N/A
C	6,000 sq ft	4.5	508	1,186
Other				
Mobilehome Parks	3,000 sq ft/unit	4-7	N/A	N/A



Rural Residential				
Zone	Minimum Parcel Size	Dwelling ^(a) Units/Acre	Acres	Potential Dwelling Units
1990 Total				82,941
1985 Total				66,620
Increase (decrease) in Potential Units				16,321

- a. Assumes 80% net building area
- b. Depending on zone subgroup
- c. One additional unit per parcel allowed under specified conditions
- d. One additional unit per each parcel over ten acres
- e. One additional unit per each five acres
- f. 6,000 sq. ft. minimum if connected to public or private sewer
- g. Up to seven units per acre if connected to public or private sewer
- h. Second unit ("granny flat") allowed in addition
- i. Density increases allowed are two time units allowed in AE, A/RR, RRE and PR zones, and 1.25 times those allowed in R-1, R-2, R-3 and C

Source: Yuba County Housing Element



11.5 HOUSING PROGRAM

State law requires that housing elements show the actions, funding and responsible parties for the County's housing plan and program. Consequently, Yuba County's housing program contains goals, objectives, policies, actions, responsibilities and schedules, all of which are set forth in the *Housing Element*. Each housing goal is supported by objectives and policies that will lead to the achievement of that goal. Policies are supported by an action or series of actions to ensure that each policy is implemented. Each action is further supported by the Staff position or agency responsible, time schedule and funding source. The resources available to the County to implement the goals and policies of the *Housing Element* include: the County's land use, zoning and development controls; the federal Housing and Community Development Block Grant program (administered by the State); the Yuba County Housing Authority; and other State and federal housing subsidy and financing programs. Programs which are relevant to the County's *General Plan* update are described below.

Adequate Sites for Housing, In Particular Rental Housing

Although zoning does not currently appear to be a constraint to the development of affordable housing, the County will continue to monitor development proposals and its Zoning Ordinance to ensure that sufficient housing at various densities can be encouraged.

Development of Sites for Multifamily Housing

The most critical housing need in the county is for affordable multi-family rental housing and large family housing. Multifamily rental housing does not typically provide dwelling units for large families, so the County will encourage developers to provide 15 percent of rental dwelling units for large families (3 and 4 bedroom units).

Zoning of Land for Sufficient Supply

The County will annually review the supply of zoned land for residential development and, based on the expected level of development over the subsequent 5 years, take actions to zone sufficient vacant, environmentally



unconstrained land with facilities and services (or the ability to be served within 5 years).

Funding for Drainage Improvements

The County will apply to the Yuba County Water Agency for a loan to construct drainage improvements in Olivehurst and Linda to increase residential development opportunities.

Infrastructure Needs Analysis

The County will identify infrastructure needs on a community-by-community basis to determine present deficiencies and estimate future needs to accommodate new development. In undeveloped areas, land owners requesting approval of any large development projects will be required to finance the preparation of a specific plan, one component of which will be an infrastructure needs analysis.

Housing for Older Adults

There is a need for additional housing to meet the needs of older adults, particularly those who are low-income. The County will take a more proactive position and provide regulatory incentives for elderly housing, including density bonuses, fee reductions for low-income housing, expedited permit processing, and technical assistance in applying for governmental funding.

Preservation of Mobilehome Parks

The County will review its Zoning Code to ensure that mobilehome parks are properly zoned to encourage their continued use (this policy will not apply to parks which are not feasible to rehabilitate and/or maintain for residential use due to their severe state of deterioration).

Feasibility of Redevelopment Tax Increment Financing

The County will study the feasibility of designating redevelopment areas in Linda, Olivehurst, and/or other communities which contain blighted areas and which could benefit from coordinated public actions under a redevelopment agency.



Homeless Services

The County will allow, as of right, the creation or expansion of existing homeless and transitional housing facilities for up to six persons on any site designated for multi-family residential use. Homeless and transitional housing accommodating up to twelve persons would be allowed by conditional use in multifamily residential areas. Facilities accommodating any number of persons would be allowed, as of right, in commercial and industrial zones.

Large Family Housing

To increase the supply of large family housing for low-income households, the County will require that any rental housing development in which it is a participant, either by virtue of applying for State or federal funding, density bonuses or development incentives, contains housing suitable for large families.



SECTION TWELVE TRANSPORTATION AND CIRCULATION



SECTION TWELVE TRANSPORTATION AND CIRCULATION

An inventory and evaluation of the operating characteristics of the existing circulation system is the initial task required to develop a comprehensive plan to guide transportation planning in Yuba County. To understand existing travel characteristics and conditions, all major aspects of transportation in Yuba County have been inventoried and analyzed. The following sections discuss existing roadway functions, traffic volumes and traffic Levels of Service, as well as transit, rail service, and bicycle routes.

12.1 STREETS AND HIGHWAY INVENTORY

12.1.1 Functional Classification

Yuba County is served by a system of state highways and county roads. The State highway system consists of both controlled access freeways and conventional highways. The County roadway system is comprised of "Major" roads, "Collector" roads and "Local-Residential" streets (Figure 12-1 inserted separately at the back of this document). County roadways are further classified with respect to "urban" and "rural" facilities. In addition, roadway facilities in Yuba County can be further categorized with respect to the general topography of the County. Yuba County topography is diverse, with terrain generally categorized as "flat" in the western portion of the County, "rolling" in the central portion of the County and "mountainous" terrain in the eastern portion of Yuba County.

County roadway classifications are defined below. In general, the majority of County roadways have been constructed to meet the relatively low volumes historically experienced in rural Yuba County, and have not been constructed to the ultimate section as identified by the current roadway classifications.

Major Roads: Ultimately, Major Roads within Yuba County will be divided highways with a center median. A 110 foot right of way is designated, with a 64 foot pavement section in rural areas and an 86 foot section, capable of providing on-street parking, designated in



urban areas. Both sections provide four through travel lanes and a center median.

Collector Roads: Collector Roads in Yuba County have an 84 foot right of way in urban areas. A 64 foot pavement section is provided, and Collector Roads are capable of providing four travel lanes with parking, or, by eliminating parking, five lanes through intersections. In rural areas, a 40 foot pavement section is designated, providing two travel lanes and on-street parking or, at intersections, three travel lanes.

Local-Residential Streets: In Yuba County, residential streets are constructed within a 60 foot right of way. The pavement section in urban areas is 40 foot, with on street parking. A 28 foot pavement standard is used in rural areas.

12.1.2 State Highways

Four State highways traverse Yuba County. State Routes 65 and 70 provide north-south circulation through the western portion of the County and through the City of Marysville. State Route 49 provides north-south circulation through the extreme eastern edge of the County. State Route 20 is the only east-west highway in the County, intersecting State Route 70 in Marysville and extending east into Nevada County. The following text describes state highway facilities serving Yuba County.

State Route 20 is a two, four and six lane facility which extends through Yuba County from Sutter County in the west to Nevada County in the east. State Route 20 is a regional east-west facility linking the coastal area in the west to the Sierra Nevadas in the east. The facility serves regional commercial, agricultural, commuter and recreational traffic.

Through rural Yuba County, the route is a two-lane highway which transitions from flat to rolling terrain in the west to mountainous terrain in the east as the road extends into Nevada County. Passing lanes are provided in several locations along the route through Yuba County. In several places east of Marysville Road, the roadway is less than 24 feet wide and lacks paved shoulders.



In the City of Marysville, much of the route provides four travel lanes through the urban area. Counts published by Caltrans for State Route 20 range from 3,900 ADT west of Hammonton Smartville Road to 9,000 ADT at the east Marysville city limit and 37,500 ADT at the Feather River Bridge in Marysville. The majority of State Route 20 through Yuba County is designated as a conventional highway, with short segments of expressway classification.

State Route 49 is a two lane roadway which extends approximately 9.5 miles from Nevada County through Yuba County to the Sierra County line. It is classified as a conventional highway. Caltrans reports daily traffic volumes on the facility from 1700 ADT at the Nevada County line to 1100 ADT at the Sierra County line.

State Route 65 extends from the Placer County line to SR 70 in Yuba County, a distance of approximately nine miles. The segment of SR 65 south of South Beale Road is a two lane conventional highway, while to the north, the road is a four lane freeway. State Route 65 runs in a generally north/south direction providing local access between the Marysville area and the areas of Wheatland, Lincoln and Roseville, while connecting the county with Interstate 80 and points east. State Route 65 joins State Route 70 between the McGowan Parkway and Olivehurst Avenue interchanges.

Caltrans indicates average daily traffic volumes of 10,300 vehicles on State Route 65 north of the City of Wheatland to 12,300 vehicles north of the McGowan Parkway.

State Route 70 is a two and four lane highway which extends from SR 99 in Sutter County to the Butte County line through Yuba County. The roadway is classified as conventional highway, expressway and freeway over various segments. State Route 70 runs north/south, linking Marysville and other northern regions with the Sacramento Metropolitan area.

Caltrans reports average daily traffic volumes on State Route 70 from 8,700 ADT at the Butte County line to 51,000 ADT at the Feather River Bridge. Volumes south of Marysville range from 10,200 ADT at the Sutter County line to 26,000 ADT north of Olivehurst Avenue.



Planned Highway Improvements: Major improvements to State Route 70 and State Route 65 are currently in the planning stage, while other regional circulation improvements are also planned for the state highway system.

Caltrans is currently working toward the completion of a four-lane freeway for State Route 70 from the State Route 99 terminus to Marysville. This work is currently being designed. In addition, State Route 65 is planned to be incrementally widened to four lanes from Roseville northward, and planning for expanded facilities around communities to the south such as Lincoln and Wheatland is underway.

Caltrans is in the process of planning the Third Bridge Crossing over the Feather River. The Third Bridge Crossing is a designated "Major Road" on the current Yuba County *Circulation Element*. This facility, which is currently expected to tie into State Route 70 near Erle Road, will improve circulation in the urbanized area of Yuba City and Marysville. Current Caltrans planning anticipates a staged project, incorporating initial surface street connections to the bridge, and ultimately, direct ramps connecting the bridge with State Route 70. A portion of the anticipated cost of this project is included in the Yuba County Public Facilities Fees Program.

Another important future improvement is the State Route 70 Bypass of Marysville. This improvement would link State Route 70 at the State Route 65 junction with the balance of the route north of Marysville. This project is also in the early stages of Caltrans planning. While a formal Route Adoption Study and full environmental analysis remains to be completed, two general alternatives have been suggested by Caltrans around the east side of Marysville through the East Linda area. In addition to consideration of these two general alternatives, other design elements, including the location of connecting ramps near the State Route 70/65 junction remain to be determined. The Marysville Bypass is included in the Yuba County *Circulation Element*, and limited funding is also provided in the Yuba County Public Facilities Fees Program.

Caltrans plans for the future of State Route 20 in Yuba County east of Marysville reflect the general assumption that adjacent development



will not be intense and will continue to be low density residential. The *Route Concept Report* for State Route 20 suggests that over the next twenty years, this road will remain a two lane conventional highway and expressway. Additional passing lanes and bridge replacement projects will be pursued.

12.1.3 County Roadways

Existing roadways throughout the county are primarily comprised of 2-lane rural facilities reflecting the rural nature of the county. Many of the two lane roads are designated as future Major or Collector Roads. The following text is a description of existing Major streets and Collector roadways throughout Yuba County, and those proposed in the existing *Circulation Element*.

Major Roads: The following routes within Yuba County are designated as Major roads, although many have not been constructed to more than two lanes. Ultimately, the current *Circulation Element* indicates that these routes will be divided highways with a landscaped median giving a parklike atmosphere.

Browns Valley Route (Spring Valley Road - Marysville Road - Willow Glen Road - La Porte Road): From the City of Marysville northeast to the intersection of Challenge Road below the community of Challenge.

Spring Valley Road: From State Route 20 in the south to Marysville Road in the north. This rural two-lane facility provides 19 to 24 feet of chip seal pavement with zero to six foot shoulders. Pavement condition is generally poor, with centerline striping provided on only a portion of the facility. Two narrow bridges provide creek crossings approximately one mile north of State Route 20 and approximately one-eighth mile west of Marysville Road.

Marysville Road: From Highway 20 in the south and extending north into the foothill and mountain region of Yuba County. This two-lane road, from the intersection of Marysville Road and Willow Glen Road to State Route 49, serves the communities of Oregon House and Dobbins and crossing the Bullards Bar Dam makes the only connection to the community of Camptonville, the northeast part of Yuba County



and Sierra County. The facility is designated as a major road north of Spring Valley Road and, while undesignated in the *Circulation Element*, serves as a collector road south of Spring Valley Road to SR 20. The western portion of Marysville Road is a high design rural two lane road. The road generally has a pavement width of 24 feet, with shoulders which vary from about 4 feet to 6 feet. The alignment of the west portion of the road is generally conducive to travel speeds of greater than 50 mph. Traffic counts indicate that Marysville Road carries from 4,100 ADT north of Browns Valley to 700 ADT west of SR 49.

Simpson Lane: From the City of Marysville to the proposed SR 70 Bypass of Marysville. Currently, Simpson Road links Ramirez Road in Marysville to Hammonton Smartville Road in the east.

Ramirez Road - Unnamed section - Jones Road: From SR 70 east-southerly to Beale Air Force Base. This is a route intended to serve Beale Air Force Base from the northwest. It also gives the county another crossing of the Yuba River, and ties in with a circle route through Beale AFB southward. Ramirez Road currently carries from 1,000 ADT east of SR 70 to 1300 ADT west of Mathews Lane.

Challenge Road - Indiana New York Road - Oregon Hill Road: From Butte County to Marysville Road. This route connects Oroville Reservoir to Bullards Bar Reservoir. The current *Circulation Element* calls for a realignment south of the community of Challenge using part of the Indiana New York Road right-of-way. This would improve the route and will encourage Challenge to grow to the south. Challenge Road provides 23 ft.- 24 ft. of pavement and currently carries 1100 ADT. Oregon Hill Road provides an average of 18 feet of pavement at the northerly end of the roadway and widens to 29 feet of pavement at the south end north of Marysville Road. Currently, Oregon Hill Road carries only about 100 ADT north of Marysville Road.

Feather River Boulevard: From North Beale Road south to Route 70. This was once the main highway to Sacramento. Feather River Boulevard now serves West Linda and the industrial and agricultural areas in southwest Yuba County. The facility carries from 1,600 ADT north of Broadway to 4,800 ADT south of Grand Avenue. The



roadway terminates at an at-grade intersection with State Route 70 and has a paved width of 22 feet with a wide unpaved shoulder. The proposed Third Bridge Crossing includes an interchange at Feather River Boulevard. Feather River Boulevard also provides access to the developing industrial area south of the Yuba County Airport. As a result, trucks use this road on a regular basis.

North Beale Road: The current *Circulation Element* suggests that from Lindhurst Avenue it will connect at Griffith to the new urban loop road. North Beale Road is the primary access into the *East Linda Specific Plan Area*. Originating at State Route 70, North Beale Road extends to the east through Linda and ultimately to the main gate of Beale Air Force Base which is located six miles to the east. North Beale Road is currently a four lane roadway (two travel lanes in each direction) with left turn pockets at major intersections. East of Yuba College, North Beale Road narrows to two lanes with left turn lanes at major intersections and pavement sections approximately 40 feet in width.

Pasado Road - Erle Road: This route will eventually extend from Route 99 in Yuba City to Beale Air Force Base. By means of a modified interchange on existing State Route 70 and the Third Bridge, it will open the area east of the Southern Pacific Railroad to development, tie Beale Air Force Base closer to the community and make the Yuba County Airport and industrial area more accessible.

Erle Road is designated as a Major Road in the *Yuba County Circulation Plan*. Ultimately, the road would link Beale Air Force Base in the east with Linda, State Route 70 and Yuba City to the west. Currently, Erle Road is a two lane rural road. From State Route 70, Erle Road extends east on a grade separation across the Southern Pacific Railroad tracks and past Griffith Avenue before jogging to the southeast. West of State Route 70 Erle Road is known as Pasado Road. Recent counts obtained from Yuba County indicate that Erle Road carries 1,600 ADT east of Lindhurst Road.

The *East Linda Specific Plan* suggests that Erle Road will need to be widened to four lanes with development of the Specific Plan area. Additionally, recent traffic studies suggests that a six lane section will



be needed from the interchange to the first Edgewater Circle intersection in the *East Linda Specific Plan Area*.

Arboga Road: From Pasado Road south to McGowan Road. This route is an industrial street serving the Airport and is a part of a loop system. Its connecting streets tie into the freeway system. Currently, Arboga Road is a rural two lane north/south roadway running from Olivehurst southerly to Plumas - Arboga Road and the northern limit of the proposed *Plumas Lake Specific Plan Area*. The average pavement width of Arboga Road is 22 feet with no shoulder available south of McGowan Parkway. North of McGowan Parkway, Arboga Road is designated as a Major Road, while it is a Collector Road south of McGowan Parkway.

Lindhurst Avenue: From State Route 70 south to Erle Road. Lindhurst Avenue is a frontage road to State Route 70 which is designated as a Major Road north of Erle Road. South of Erle Road, Lindhurst Avenue is designated a Collector Road. Lindhurst Avenue is a two lane roadway for approximately 3,000 feet north of Erle Road which widens to four lanes at North Beale Road.

McGowan Parkway - Griffith Avenue - Hammonton-Smartville Road: In the current *Circulation Element*, an urban loop road is intended to connect to Feather River Boulevard on the west and tie in with a new interchange on a State Route 20 Freeway near the Doolittle Gate at Beale Air Force Base. It is an extremely important facility for the residential area east of the Southern Pacific Railroad tracks. McGowan Parkway is a major east/west roadway extending from just east of State Route 65 to Arboga Road, with interchanges at State Route 65 and State Route 70. Between State Route 65 and State Route 70, McGowan Parkway has two lanes and a paved shoulder. Through the community of Olivehurst the road is a two lane facility with a center left turn lane. In this area the roadway is approximately 54 feet wide, curb to curb and has been striped to provide bicycle lanes or parking. West of Olivehurst Avenue, McGowan Parkway narrows to two lanes before terminating at Arboga Road.

Griffith Avenue: Ultimately, this Major Road is expected to connect McGowan Parkway on the south with State Route 20. Currently,



Griffith Avenue is a paved two lane road north of Erle Road. Pavement sections are 26 feet wide with no paved shoulders. South of Erle Road, Griffith Avenue is a two lane gravel road which borders the east side of the proposed *Stonebridge Specific Plan Area*.

Country Club Lane - Plumas Arboga Road - (New Section) - South Beale Road: In the current *Circulation Element*, this is a southern circle route which goes from Feather River Boulevard on the west to the South Gate of Beale Air Force Base. Country Club Lane is currently a two lane county road connecting the Plumas Lake Golf Club with Feather River Boulevard. The extension of Country Club to Plumas-Arboga Road is planned via an alignment to the southeast.

Plumas-Arboga Road: This two-lane rural road begins at a T-intersection with Arboga Road and travels east along the north boundary of the proposed *Plumas Lake Specific Plan Area* for about one mile. The road then turns south and parallels State Route 70 before crossing under the highway. After providing access to the highway via an at-grade intersection, Plumas-Arboga Road continues easterly to Forty Mile Road.

The ultimate facility envisioned is development of Plumas-Arboga Road as a major east-west facility running from Feather River Boulevard via a connection to Country Club Drive to a new interchange at the South Beale Road intersection on SR 65. A new interchange would be also be constructed on SR 70 in the vicinity of the Plumas - Arboga Road/Algodon Road intersection.

Main Street - Wheatland Smartville - Long Ravine Road - Route 20: In the current *Circulation Element*, the route travels from State Route 65, west of the City of Wheatland, eastward around Beale AFB via a new route then northerly to the community of Smartville. This route is intended to serve not only the Capehart housing at Beale AFB and Camp Far West Reservoir, but also tie Wheatland in with Smartville giving an alternate by-pass of the urban area. It also projects Wheatland's Main Street to the west giving this city a needed second entrance from a future freeway. Smartville Road and Spenceville Road are currently in place and comprise a portion of this route.



Smartville Road: A 22 foot wide 2-lane facility providing north-south circulation from Hammonton Smartville Road south to Beale AFB. The facility adheres to the rolling terrain and generally follows an unengineered alignment. Smartville Road currently carries 900 ADT at its northerly end and 500 ADT north of Beale AFB.

Spenceville Road: A 2-lane facility linking Smartville Road and Camp Far West Road south of Beale Air Force Base to the City of Wheatland and State Route 65. To the southwest, Spenceville Road is designated as Main Street through Wheatland. Spenceville Road provides 24 feet of pavement with 6 ft - 10 ft graded shoulders along the majority of its length. Spenceville Road currently carries 2,200 ADT north of the City of Wheatland.

Beale AFB Routes: While it is recognized that the *Circulation Element* cannot force the federal government to either open these roads to the public or construct them, it is important to show the continuation of a route through this area, if for some reason the policies of entry are changed or the Base is reverted to other use.

"New Route": From Marysville Road (near Peoria Road) to State Route 20 in either Yuba or Nevada counties. This is a proposed northwest-southwest route in the current *Circulation Element* crossing the Yuba River between the Englebright Dam and Smartville. This route will link Nevada County to Butte County.

Collector Roads: The following group of roads will collect traffic and route it to major roads or freeways. In the urban area they will play a major role in serving the industrial, commercial and high density residential areas.

Woodruff Lane: The route is from the State Route 70 eastward to State Route 20. Woodruff Lane currently carries from 1,000 ADT east of SR 70 to 2300 ADT west of State Route 20.

West Hallwood Boulevard: In the current *Circulation Element*, the route is from State Route 20 westward to Jack Slough Road. This route is intended to serve the residential areas in north Marysville. The facility currently carries 100 ADT east of Kimball Lane.



Hallwood Blvd carries from 500 ADT north of Walnut Avenue to 2,400 south of SR 20.

Jack Slough Road: From the Marysville city limits north of West Hallwood Boulevard. This is the main north-south street to serve the expansion of the City of Marysville in this area. The roadway currently carries 400-600 ADT.

Loma Rica Road: From Marysville Road northeasterly through the community of Loma Rica and connecting back to Marysville Road at Stanfield Hill. Loma Rica Road currently provides 21 ft.- 25 ft. of pavement along the majority of its length. Traffic volumes range from 2,700 ADT north of State Route 20 to 900 ADT west of Marysville Road.

Fruitland Road: From Butte County southeasterly through the community of Loma Rica to Spring Valley Road. Fruitland Road is a rural two-lane facility providing circulation through the foothill region. The facility provides circulation via a winding alignment to Marysville Road with an average pavement width of 22 feet between the Butte County line and Loma Rica Road. East of Loma Rica Road, 20 feet of pavement is provided. Current traffic volumes range from 600 to 900 ADT.

Los Verjeles Road: This route provides a direct east-west connection between Butte County and Marysville Road via Loma Rica Road. The roadway provides 20 feet of pavement and currently carries 1,100 ADT.

La Porte Road - Frenchtown Road - Rices Crossing Road: That section of La Porte Road from Butte County northeasterly cutting across Willow Glen Road meeting the intersection of Frenchtown Road and then proceeding southerly through Oregon House tying in with Rices Crossing Road to a proposed bridge crossing of the Yuba River into Nevada County. This route is important in that it not only serves a rapidly growing area of second homes but it also connects Butte County to Nevada County and serves a regional purpose. Frenchtown Road is 20 ft. - 22 ft. in width and carries from 800 ADT



at the southerly end to 1,600 ADT south of Willow Glen Road. Rices Crossing Road currently carries 1,600 ADT south of Frenchtown Road.

La Porte Road: From Challenge Cutoff and Oregon Hill Road northerly to North Star and on to Plumas County. This is a mountain road which serves a growing summer resort area. This segment of La Porte Road provides 24 feet of pavement and carries from 700 to 1100 ADT.

Celestial Valley Road - Moonshine Road: From State Route 49 easterly across the new Celestial Valley Bridge to Sierra County. This route will provide access to the southwestern part of Sierra County.

Scott Forbes Road: From Marysville Road northeasterly to Rices Crossing Road. This is presently a difficult road which the *Circulation Element* indicated is needed to open the eastern part of Yuba County. The roadway carries 200 ADT east of Township Road.

Wheatland Smartville Road connections: Two short segments leading into and out of Beale AFB.

Spenceville Road: From Wheatland Smartville Road eastward to Nevada County.

Camp Far West Road: From Wheatland Smartville Road south of Beale AFB along the north shore of Camp Far West Reservoir north to Long Ravine Road then easterly to Nevada County. This is a recreation loop road to serve the lake area. The majority of this facility is currently unpaved.

Long Ravine Road: A short segment between Camp Far West Road to Wheatland Smartville Road. This facility is currently unpaved and experiences minor traffic volumes.

McCourtney Road - Perimeter Road: A short segment within Yuba County serving the east shore of Camp Far West Reservoir.

Ostrom Road - Jasper Lane: From State Route 65 southeasterly to Wheatland Smartville Road. This is the eastern half of a loop road



around the city of Wheatland. The current traffic volume on Ostrom Road is 500 ADT west of South Beale Road. Ostrom Road will provide access to a future landfill. Jasper Lane carries 300 ADT.

Forty Mile Road - Rio Oso Road: This is the western half of a loop road around the City of Wheatland. Forty Mile Road links State Route 65 north of the City of Wheatland to Pleasant Grove Road south of the Bear River. Rio Oso Road provides a connection from Forty Mile Road into the City of Wheatland. The current volume on Rio Oso Road at the Wheatland City limit is 1,350 ADT.

Arboga Road - Broadway: From McGowan Parkway southerly to Feather River Boulevard. Broadway is an important street within the community of Arboga. The road is currently two lanes and connects Feather River Boulevard with Plumas-Arboga Road. Current volumes on Broadway range from 400-600 ADT.

Arboga Plumas Road: A short section eastward from Arboga Road to a new proposed interchange on State Route 70 Freeway. This is to tie an area of future urban growth in Arboga to the freeway system.

7th Avenue: From Powerline Road westward to Arboga Road. This is a major east-west connection in the Olivehurst Community. It serves the commercial center and gives access across the Western Pacific tracks to the Yuba County Airport. Current volumes range from 1,100 ADT west of Powerline Road to 2,300 ADT east of Arboga Road.

Olivehurst Avenue: From State Route 70 Freeway southerly to McGowan Parkway. This is the main backbone route within the community of Olivehurst. That portion north of 7th Avenue is the present commercial center of the community. The road is approximately 1 1/2 miles long with the southern terminus at a "T" intersection with McGowan Parkway and the northern terminus at the Olivehurst interchange on State Route 70. The paved width of the road averages 22 feet with unpaved shoulders. Current volumes range from 2,100 ADT at the south end of the facility to 12,000 ADT at the Olivehurst interchange.



Powerline Road: This is a frontage along State Route 70 Freeway from Olivehurst Avenue southeasterly to McGowan Parkway. Currently, Powerline Road provides access to Lindhurst High School and carries 3,000 ADT east of Olivehurst Avenue.

Lindhurst Avenue: From Erle Road southerly to Route 70 Freeway. This route connects the communities of Linda and Olivehurst.

Arboga Road: From Feather River Boulevard southward to Pasado Avenue. This is primarily a residential collector which also serves the Airport.

North Beale Road: The portion of the road from Griffith Avenue eastward to Beale AFB is a collector road. This facility currently carries 4,700 ADT east of Brophy Road.

Brophy Road: From North Beale Road northward to Hammonton-Smartville Road. The current traffic volume on the roadway is 400 ADT.

Hammonton Smartville Road: From Simpson Lane eastward to Griffith Avenue.

Simpson Lane: From the State Route 70 Freeway southeasterly to North Beale Road via a new segment south of the railroad tracks.

North Beale Road: From State Route 70 Freeway southerly to that portion where the south ramp of North Beale Road enters.

Beale AFB Routes: There are two Collector routes included in Beale AFB to complete the road system should this area ever be open to the public.

New Road (N. Marysville): A new road from State Route 20 westward to Jack Slough Road. In the current *Circulation Element*, this is an important proposed road to serve a projected industrial area. It would connect with the new State Route 70 Freeway.



"Lake Shore" Road (new road): The existing *Circulation Element* includes a new road using parts of Bald Mountain Road, Peoria Road and Township Road. It would connect the southerly portion of Marysville Road to the "New Major Roadway" planned to extend into Nevada County. Peoria Road connects Marysville Road to State Route 20. The existing pavement section varies from about 14 feet to 28 feet wide, with the widest section occurring on the recently constructed Dry Creek bridge. Available shoulders are generally 2 to 4 feet wide, although there are locations where no shoulders exist. The alignment of the road allows travel speeds of about 25 mph, although there are segments where the condition of the pavement is too rough to permit comfortable travel at speeds greater than about 15 mph. Currently, Peoria Road handles less than 200 ADT.

Hammonton Smartville Road (Beale AFB to Smartville Road): is a rural two-lane facility linking State Route 20 in the north to the Marysville area in the south. The facility acts as a bypass for through traffic travelling between Grass Valley and Nevada City and the urbanized area south of Marysville and Beale Air Force Base. South of State Route 20, Hammonton Smartville Road provides 23 - 24 feet of pavement, with 0 - 3 foot shoulders.

Scenic Corridors. Because of the special scenic qualities of certain areas of Yuba County, those roads traversing these areas are recommended in the current *Circulation Element* for protection by special ordinances to enhance scenic view sheds. They are:

- Los Verjeles - Marysville Road
- New Route (Marysville Road to Nevada County)
- Spring Valley Road - Marysville Road - Willow Glen Road
- La Porte Road
- Rio Oso Road
- Wheatland Smartville Road
- Camp Far West Road
- Loma Rica Road
- Feather River Boulevard south of Country Club Road
- State Route 70
- State Route 49



12.1.4 Roadway and Intersection Operations

Level of Service Methodology

To assess the quality of existing traffic conditions throughout Yuba County, Levels of Service have been identified for Major Roadway and Collector facilities throughout the county and major intersections which experience significant traffic volumes. "Level of Service" is a qualitative measure of traffic operating conditions whereby a letter grade, "A" through "F", corresponding to progressively worsening traffic conditions is assigned to an intersection or roadway segment. Current evaluation methodology is dependent upon the physical characteristics of the roadway segment or intersection and can additionally be categorized with respect to "Urban" or "Rural" conditions. Specific methodology and evaluation criteria regarding intersection and roadway performance is presented in the Appendices.

Current roadway and intersection operations throughout Yuba County are summarized in Tables 12-1 through 12-3. Current traffic operation on all designated Major Roads and Collector Roads is identified. Level of Service is based on Urban (U) versus Rural conditions, and in rural areas, the reported Level of Service assumes either Level (RL), Rolling (RR) or Mountainous (RM) terrain. Intersection operations at all signalized locations in the county and at key locations within Marysville are presented. In addition, operations at key unsignalized intersections throughout the county are presented. Table 12-4 displays operations on the State highway system throughout Yuba County and Marysville.

As indicated, traffic operations are generally good on the County roads which serve rural Yuba County but deteriorate to relatively unacceptable levels in some developed urban locations. For example, the Level of Service on State Route 70 is very good on the freeway south of Marysville, but drops to LOS "E" on the conventional highway through the community. Similarly, State Route 20 also operates at LOS "D" through Marysville. Traffic conditions are also marginally acceptable on North Beale Road through Linda.

In rural areas, the Level of Service on State highways through rolling or mountainous areas is also reduced to LOS "D", even though the overall volume of traffic does not appear excessive. This conclusion results from the



relatively low volume thresholds associated with good Levels of Service on such facilities.

Most rural Yuba County roads currently carry traffic volumes within a range of 1,000 to 3,000 ADT. As a result, satisfactory levels of service are achieved.

The operation of signalized intersections is an indication of the overall quality of traffic flow in urban areas. As indicated, Levels of Service are generally acceptable at those signalized locations controlled by Yuba County.

12.2 TRANSIT SERVICE

Public mass transportation service in Yuba County is provided by the Hub Area Transit Authority (HATA). HATA serves the Marysville, Yuba City and surrounding unincorporated Yuba County and Sutter County areas. In addition, service is provided to the foothill area of Yuba County, the City of Live Oak, and the City of Sacramento. Specifically, the following services are provided:

Urban Dial-A-Ride: The Urban Dial-A-Ride is the local transit service provided in the greater Yuba City/Marysville area, serving Marysville, Yuba City and the unincorporated Olivehurst, Linda, and Tierra Buena areas. This area is divided into three "zones". These three zones can be generally described as the Yuba City and unincorporated Sutter County area, the City of Marysville area, and the unincorporated Yuba County area. Patrons call HATA to schedule a pick up time and arrival time. Service is provided within each zone with transfers to other zones accommodated at a central transfer site in Marysville (Montgomery Ward store). Service is provided Monday through Friday from 6:00 A.M. to 6:00 P.M. and on Saturday from 9:00 A.M. to 3:00 P.M. No service is provided on Sundays. Ridership through three quarters of the last fiscal year, July 1990 through March 1991, was 109,780 passenger trips. Vehicle service hours for this same period were 18,325.75 hours.

Foothill Route: HATA provides service between the Yuba County foothills and the central transfer site in Marysville. The service is a reservation only service which operates one round trip (foothills to Marysville and back) Monday through Friday. However, if no reservations are made prior to 6:00



TABLE 12-1
COUNTY ROADWAY LEVELS OF SERVICE (MAJOR ROADS)

MAJOR ROADS FACILITY	LOCATION	CURRENT DAILY TRAFFIC	PAVEMENT WIDTH (ft.)	LEVEL OF SERVICE
Arboga Road	Pasado Road to McGowan Pky	3,400	22	A - U
Challenge Road	from Butte County to La Porte Road	1,100	23	C - RM
Country Club Lane	East of Feather River Blvd.	600	24	A - U
Erle Road	Beale AFB to Pasado	1,600	22	A - U
Feather River Blvd.	N. Beale Road to SR 70	1,400 to 16,300	22	A/B-U
Griffith Avenue	Hammonton Smartville to Erle Road	1,600	26	A - U
Hammonton Smartville	Griffith to Beale AFB gate	4,500	22	C - RL
Indiana New York Road	La Porte Road to Oregon Hill Road	500	23	B - RM
La Porte Road	Willow Glen Road to Oregon Hill Road	2,400	26	D - RM
Lindhurst Avenue	SR 70 south to Erle Road	10,200	24	B - U
Marysville Road	Willow Glen Road to SR 49	700 to 1,900	27 to 42	B - RM
McGowan Parkway	Arboga Road to SR 65	1,900 to 8,600	28 to 54	A - U
North Beale Road	Griffith to Lindhurst Avenue	6,800 to 20,000	4 LANES	A/B - U
Oregon Hill Road	La Porte Road to Marysville Road	100 to 500	18 to 22	B - RM
Pasado Road	West of Arboga Road	2,700	40	A - U
Plumas Arboga Road	West of SR 70 to Forty Mile Road	200	22	A - RL
Ramirez Road	SR 70 to Mathews	1,300	22	A - RL
Smartville Road	South of Hammonton Smartville Road	900	22	B - RR
South Beale Road	SR 65 to AFB	600	24	A - RL



MAJOR ROADS FACILITY	LOCATION	CURRENT DAILY TRAFFIC	PAVEMENT WIDTH (ft.)	LEVEL OF SERVICE
Spring Valley Road	SR 20 to Marysville Road	500	19 to 24	B - RR
Willow Glen Road	Marysville Road to La Porte Road	1,800	25 to 27	B - RM

U = URBAN LOS CRITERIA

RR = RURAL LOS CRITERIA WITH ROLLING TERRAIN

RL = RURAL LOS CRITERIA WITH LEVEL TERRAIN

RM = RURAL LOS CRITERIA WITH MOUNTAINOUS TERRAIN

Source: kdAnderson Transportation Engineers, September 1992



TABLE 12-2
COUNTY ROADWAY LEVELS OF SERVICE (COLLECTOR ROADS)

COLLECTOR ROADS FACILITY	LOCATION	CURRENT DAILY TRAFFIC (ft.)	PAVEMENT WIDTH (ft.)	LEVEL OF SERVICE
Arboga Road	McGowan to Broadway	3,700	22	A - U
Broadway	Arboga to Feather River Blvd.	600	22	A - U
Brophy Road	North Beale Road to Hammonton - Smartville Road	400	22	A - RL
Camp Far West Road	Spenceville Road to Lake	450 to 700	20	B - RR
Frenchtown Road	entire segment	800	20 to 22	B - RM
Forty Mile Road	SR 65 to Rio Oso Road	1,000	22	A - RL
Fruitland Road	Butte County to Marysville Road	600	20 to 22	B - RR
Hammonton Smartville Road	Simpson Lane to Griffith Avenue	4,500	22	A - U
Jasper Lane	Ostrom Road to Spenceville Road	300	20	A - RL
Jack Slough Road	Marysville City limit to Woodruff Lane	600	22	A - RL
La Porte Road	West of Willow Glen Road and east of Oregon Hill Road	1,100 to 1,300	24	B - RM
Los Verjeles Road	Butte County to Loma Rica Road	1,100	20	B - RR
Lindhurst Avenue	Erle Road to SR 70	9,000	24	B - U
Loma Rica Road	SR 20 to Marysville Road	2,700	21 to 25	C - RR
North Beale Road	Griffith Avenue to Beale AFB	4,500	40	C - RL
Olivehurst Avenue	SR 70 to McGowan	2,200 to 12,000	22	A/C - U
Ostrom Road	SR 65 to Jasper Lane	500	20	A - RL



COLLECTOR ROADS FACILITY	LOCATION	CURRENT DAILY TRAFFIC (ft.)	PAVEMENT WIDTH (ft.)	LEVEL OF SERVICE
Plumas - Arboga Road	between Arboga Road and SR 70	600	22	A - RL
Powerline Road	Olivehurst Avenue to McGowan	2,600 to 5,000	24	A - U
Rices Crossing Road	Marysville Road to Yuba River	1,400	22	C - RM
Rio Oso Road	Forty Mile Road to City of Wheatland	1,000	20	B - RL
Scott Forbes Road	Peoria Road to Rices Crossing Road	200	22	A - RR
Spenceville Road	At Wheatland City Limits	2,200	24	B - RL
Woodruff Lane	SR 70 to SR 20	1,000 to 2,300	22	A/B - RL

U = URBAN LOS CRITERIA

RR = RURAL LOS CRITERIA WITH ROLLING TERRAIN

RL = RURAL LOS CRITERIA WITH LEVEL TERRAIN

RM = RURAL LOS CRITERIA WITH MOUNTAINOUS TERRAIN

Source: kdAnderson Transportation Engineers, September 1992



**TABLE 12-3
EXISTING PM PEAK HOUR
INTERSECTION LEVELS OF SERVICE**

EXISTING PM PEAK HOUR LEVEL OF SERVICE				
INTERSECTION	CONTROLS	LOS	V/C	RESERVE CAPACITY
SR 20/Loma Rica Road	Stop Sign	D	N/A	131
SR 20/Spring Valley Road	Stop Sign	C	N/A	224
SR 20/Marysville Road	Stop Sign	C	N/A	252
SR 20 Hammonton Smartville Road	Stop Sign	C	N/A	297
SR 65/Main Street (Wheatland)	Stop Sign	D	N/A	170
SR 70/Plumas - Arboga Road	Stop Sign	C	N/A	256
SR 70 SB Ramps/Erle Road - Pasado	Stop Sign	C	N/A	209
Arboga Road/Erle Road - Pasado	Stop Sign	A	0.37	N/A
SR 70/N. Beale Road	Stop Sign	B	N/A	
SR 70 SB/McGowan Parkway	Stop Sign	D	N/A	177
SR 70 NB/McGowan Parkway	Stop Sign	D	N/A	191
Olivehurst Avenue/7th Avenue	Stop Sign	C	0.56	N/A
McGowan Parkway/Powerline Road	Stop Sign	D	N/A	197
12th Street/B Street (Marysville) (SR 20/SR 70)	Signal	B	0.68	N/A
12th Street/Ramirez Street	Signal	A	0.58	N/A
9th Street/B Street	Signal	A	0.37	N/A
5th Street/J Street	Signal	B	0.62	N/A
5th Street/E Street (SR 70)	Signal	C	0.71	N/A
3rd Street/E Street (SR 70)	Signal	B	0.62	N/A
North Beale Road/Feather River Blvd.	Signal	A	0.46	N/A
North Beale Road/Lindhurst Road	Signal	B	0.64	N/A
North Beale Road/Lowe Avenue	Signal	A	0.35	N/A



EXISTING PM PEAK HOUR LEVEL OF SERVICE				
INTERSECTION	CONTROLS	LOS	V/C	RESERVE CAPACITY
North Beale Road/Hammonton-Smartville Road	Signal	A	0.52	N/A
North Beale Road/Linda Avenue	Signal	A	0.44	N/A
Erle Road/Lindhurst Road	signal	B	0.64	N/A
Feather River Blvd./Arboga Road	Stop Sign	B	0.52	N/A

Source: kdAnderson Transportation Engineers, September 1992



TABLE 12-4
STATE HIGHWAY LEVELS OF SERVICE

FACILITY	LOCATION	CURRENT DAILY TRAFFIC	FACILITY CLASS	LEVEL OF SERVICE
STATE ROUTE 20	Sutter/Yuba County Line (0.00)	37,500	4E	E
	Junction SR 70 (Marysville 0.99)	26,500	4C	D
	Marysville City Limits (2.94)	21,000	2C	D
	West of Loma Rica Road (7.89)	8,200	2C	D
	West of Marysville Road (13.14)	6,800	2C	D
	West of Hammonton - Smartville Road (21.23)	3,900	2C	D
	Nevada County Line (21.67)	5,800	2C	E
STATE ROUTE 49	Nevada County Line (0.00)	1,700	2C	C
	North of Marysville Road (3.82)	1,300	2C	C
	Sierra County Line (9.37)	1,000	2C	C
STATE ROUTE 65	Placer County Line (0.00)	10,300	2C	D
	Evergreen Drive (Wheatland 1.50)	10,300	2C	C
	North of McGowan Parkway (8.03)	12,300	4F	A
	SR 70 Junction (9.18)	12,300	4F	A



FACILITY	LOCATION	CURRENT DAILY TRAFFIC	FACILITY CLASS	LEVEL OF SERVICE
STATE ROUTE 70	Sutter County Line (0.00)	10,200	2E	D
	North of McGowan Parkway (7.35)	12,200	4F	A
	North of Olivehurst Avenue (9.28)	26,000	4F	B
	North of Beale Road (13.50)	51,000	4F	C
	South of SR 20 (14.70)	30,000	4C	E
	14th Street (Marysville 14.87)	18,800	2C	E
	24th Street (15.35)	11,400	2C	E
	Butte County Line (25.82)	8,700	2C	D

Source: kdAnderson Transportation Engineers, September 1992



P.M. for service the following day, the trip is not made. Similarly, service is provided only as far as the furthest reservation.

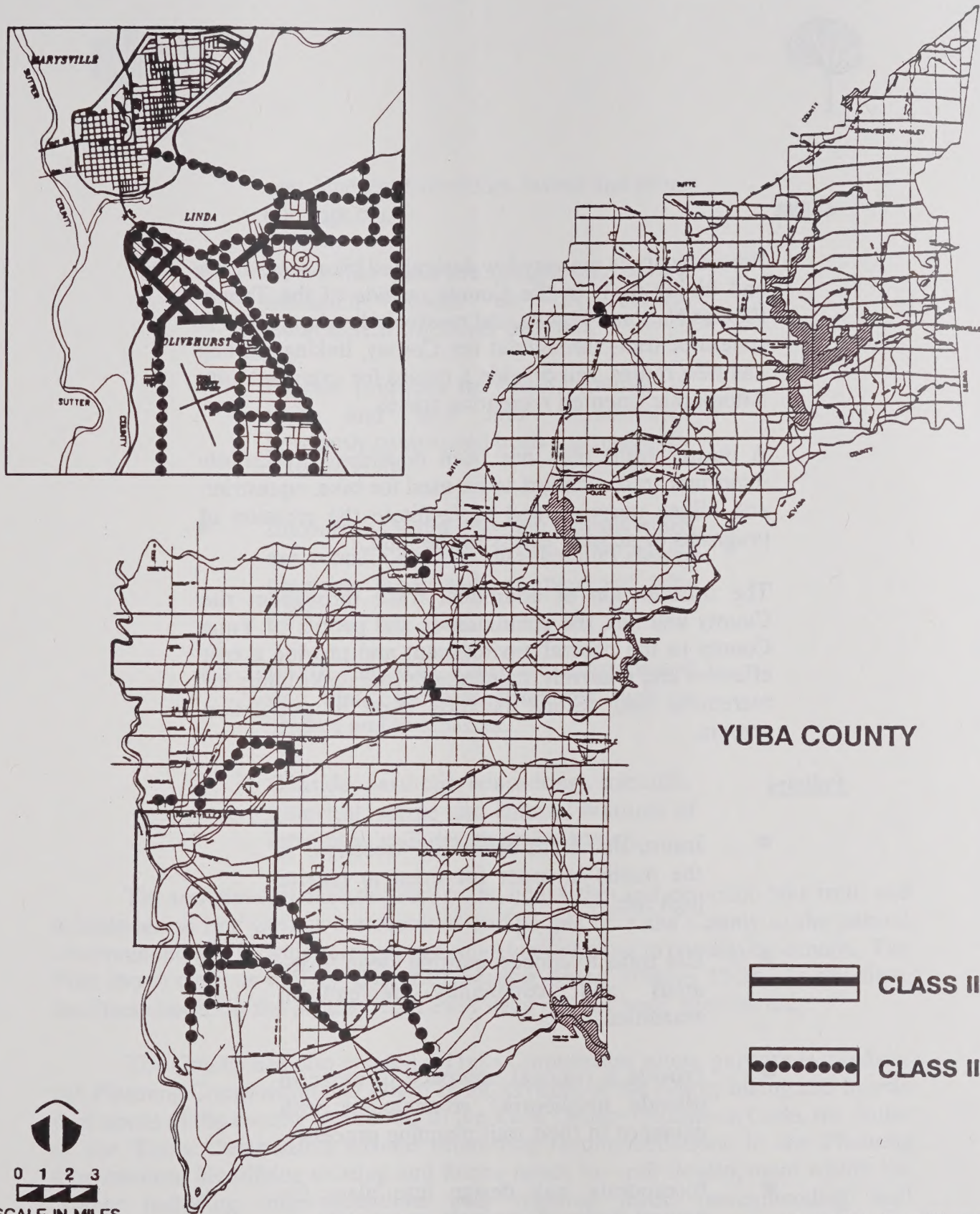
Sacramento Commuter Routes: This reservation only service provides fixed route transit service between Yuba City/Marysville and downtown and east Sacramento. Two routes are provided. One (East Sacramento Commuter) provides two round trips (Marysville/Yuba City to Sacramento and back) per day, one early in the morning and one in the early afternoon, Monday through Friday. The other route (Downtown Sacramento Commuter) provides two early and two late afternoon fixed route round trips per day to downtown Sacramento. There is also a Sacramento Midday Connection. A reservation only fixed route, the Midday Connection route is a fixed service between the Marysville/Yuba City area and downtown Sacramento and medical facilities located in East Sacramento. Two round trips (Marysville/Yuba City to Sacramento and back) are provided on Monday, Wednesday and Friday, one in the late morning and one in the early afternoon.

All of the fixed route services to Sacramento provide connection to Sacramento Regional Transit District (RT) services in the Sacramento area, with a transfer policy in effect between HATA and RT.

12.3 BIKEWAY FACILITIES

Bicycle circulation in Yuba County is provided in various areas via a system of Class II (on-street bicycle lanes) and III (designated routes without lanes) facilities. Due to the increased use of bicycle travel in the county, there is increasingly greater demand to provide adequate facilities for bicycles as an alternative to motorized vehicle travel. Figure 12-2 provides an inventory of existing facilities and planned routes. There are three levels of priority for bicycle facilities based on needs. Number 1 and 2 priority projects address the needs of commuting cyclists and priority 3 projects address more rural and recreational needs. The *Yuba County Bikeway Plan* provides additional detail regarding bikeways.

In September, 1991, the Yuba County Board of Supervisors amended the *Open Space and Conservation Element* incorporating a *Master Trails Plan* into the document and adding the following text and policies:





Trails

Presently, there are very few designated bike, equestrian, and hiking trails in the County outside of the Tahoe-Plumas National Forests and reservoir developments. A system of trails throughout the County, linking existing and new routes, will provide a means for extended non-automobile oriented recreation travel.

A master trails plan has been developed to identify important trail corridors to be used for bike, equestrian and hiking purposes and to facilitate the creation of programs to acquire access to the land...

The introduction of additional trails throughout the County will link the communities and people of Yuba County to the natural environment and provide a cost effective and relatively maintenance free opportunity for recreation and natural habitats close to population centers.

Policies

- Insure that trails are easily accessible to the public in order for them to receive high use.
- Use trails to connect existing Open Space areas and community recreational amenities.
- Provide a regional approach in order to provide neighboring communities with guidance in their trail planning process.
- Incorporate trail design into plans for natural drainage channels, street right-of-



way, landscape corridors, levees and other open spaces.

- Insure that trails are designed to have a minimum impact on the natural environment whenever possible.
- Provide priorities for implementation of trails and take into consideration previously constructed trails and regionally planned trails.
- Encourage the development of trails which are accessible to the disabled and clearly designate those trails on maps and with signs.
- Insure that trail plans are incorporated into plans for new structures such as bridges and overpasses.
- Consider aesthetic, educational, scientific, historical, scenic and cultural features of interest in trail design and planning.

The trail network includes bike paths, equestrian and mountain bike trails and is intended to link various communities and people of Yuba County to the natural environment, and provide recreational opportunities close to population centers. The Plan shows trails as well as "Bike Path Staging Areas" (Figure 12-3). At this time, facilities shown on the *Master Trails Plan* have not yet been constructed.

The County has also created a Trails Commission whose purpose is to advise the Planning Commission and Board of Supervisors of the riding, hiking and bicycle trail needs of the county. According to the Yuba County Ordinance Code, the duties of the Trails Commission include submitting recommendations to the Planning Commission, identifying existing and future needs for trail development within the county including interconnections with regional trails, recommending trail improvements and priorities for trail development, seeking out funding, and



encouragement of citizen involvement in trail related decision making. The Commission is composed of 7 members and includes representatives of various groups interested in trails, as well as representatives of the two cities and the County Planning Commission.

The *Master Trails Plan* also includes minimum trail standards for use by the County as follows:

Hiking Trail

- Easement Required - 10'
- Width of Trail - 4'
- Surfacing - Conforming to natural setting
- Preparation - Minimal, to maintain natural setting

Bicycle Trail (Urban Areas)

- Easement Required - Minimum 12', preferred 20'
- Width of Trail - 8'
- Surfacing - 1" asphaltic concrete
2" aggregate base
- Preparation - Grading, including proper drainage

Horse/Mountain Bike Trail (Rural Areas)

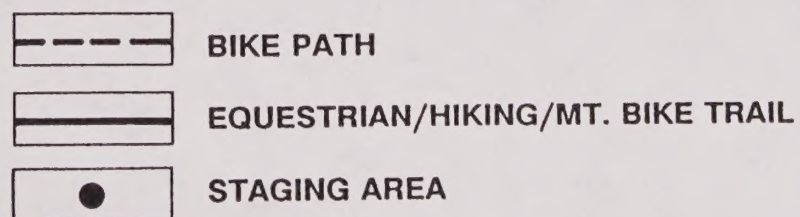
- Easement Required - Minimum 12', preferred 20'
- Width of Trail - 10'
- Surfacing - Natural, compacted fill or other approved material
- Preparation - Minimal, may include some grading and clearing of vegetation

12.4 AIRPORT TRANSPORTATION

Yuba County is served by three airport facilities, Beale Air Force Base, the Yuba County Airport and a private, public use air strip located near the community of Brownsville and known as Brownsville Aero Pines Airport. The Brownsville air strip provides no tower operations and serves only general aviation. Beale Air Force

YUBA COUNTY

Map showing trails in Yuba County, California. The map includes a grid and labels for various locations: BUTTE, WOODLAF, CHALLENGE, BROOKSVILLE, RACKERBY, OREGON HOUSE, STANFELD HILL, LOHARICA, HARTSVILLE, HARTWOOD, BEALE AIR FORCE BASE, OLIVERHURST, and VIRELAND. A legend at the bottom right indicates that dashed lines represent 'BIKE PATH' and solid lines represent 'EQUESTRIAN/HIKING/MT. BIKE TRAIL'.



Source: Yuba County Open Space and Conservation Element, 1991



Base is not discussed here, since it is a military installation. Information on the Base is, however, included in several other sections of this Paper. Additional discussion of Brownsville Aero Pines Airport and Yuba County Airport can be found in Sections 6.6 and 19.8.

The Yuba County Airport is a modern aeronautical facility with capabilities to accommodate jet air carriers, freight carriers, and all general aviation business jets and private aircraft. The Airport has a 6,000 foot primary runway and 3,280 foot crosswind runway, and features a full component Instrument Landing System, five step high intensity runway lighting, three step medium intensity taxiway lighting, a second generation terminal omnidirectional range navigation instrument landing aid, two visual approach slope indicators, an air traffic control tower, and a Federal Aviation Administration Flight Service Station.

The Airport serves as a satellite and reliever airport to Sacramento Metro Airport and provides an alternate for air carriers serving Sacramento when Sacramento Metro and other relievers are weathered in. The Airport is 930 acres in size and includes 265 acres dedicated to industrial use, fully improved and currently being marketed.

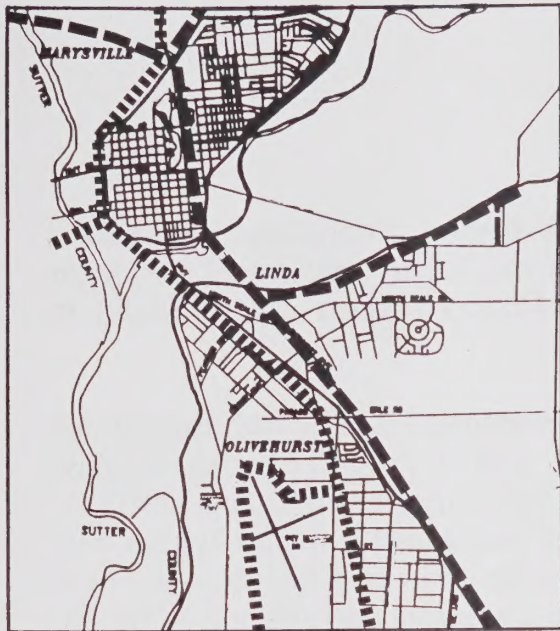
New T-Hangars , security fencing, roads, sewer and water, utilities, and other infrastructure, as well as taxiway and runway improvements and ramp overlays, have been aggressively added to the Airport over the last decade.

12.5 RAIL SERVICE

Yuba County is served by several railroads which move people and goods through the county and on to surrounding communities (Figure 12-4).

Passenger Rail Service: Passenger service is provided by AMTRAK, which operates an unstaffed terminal at 6th & A Streets in Marysville. This terminal provides direct access to the "Coast Starlight" route, which connects Los Angeles and Seattle. Local passengers can board once each day in each direction. AMTRAK uses Southern Pacific lines in this area. AMTRAK also provides scheduled local bus connections from this location to other route terminals in Roseville, Stockton and Sacramento.

Freight Rail Service: Freight service is provided by several railroads which generally serve the urban corridor along State Routes 70 and 65. Southern



YUBA COUNTY



SOUTHERN PACIFIC



UNION PACIFIC



0 1 2 3



SCALE IN MILES

Source: kdAnderson

QUAD

RAILROADS

FIGURE
12-4



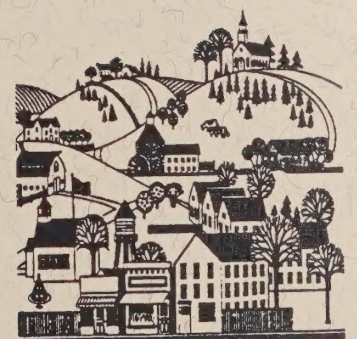
Pacific Railroad maintains one line which enters Yuba County near Wheatland and parallels State Route 65 into Marysville and the Binney Junction. The Southern Pacific line then crosses the Feather River north of Marysville and continues northerly up the valley. Southern Pacific also maintains spur lines which extend into the rural area northeast of Marysville and along the Yuba River parallel to Simpson - Dantoni Road. Sidings exist in Marysville in the area between 5th and 12th Streets.

Union Pacific Railroad has a mainline which traverses the county as well. This line enters Yuba County along the State Route 70 corridor and extends into Marysville to a Feather River crossing near 5th Street. The line then extends northerly through Sutter County parallel to State Route 99. Sidings exist in Marysville in the area north of the Yuba River to 10th Street. The railroad also maintains spur lines which service the industrial area near the Yuba County Airport.

Railroad Grade Separations: The interaction between railroads and automobiles creates potential safety conflicts at the locations where these facilities meet. Railroad grade separations have been developed in Yuba County at the following locations:

Southern Pacific: Erle Road, North Beale Road, 12th Street, State Route 70.

Union Pacific: Plumas-Arboga Road, Pasado Road, Feather River Blvd, 5th Street, 10th Street, 14th Street, State Route 70.



SECTION THIRTEEN PUBLIC SERVICES AND UTILITIES



SECTION THIRTEEN

PUBLIC SERVICES AND UTILITIES

Included in this section are descriptions of existing conditions with respect to the availability of public services and utilities within Yuba County. Public services that are provided include law enforcement, fire protection, solid waste disposal, health services, schools, parks and recreation, water, wastewater disposal and treatment. Some services, such as water supply and solid waste disposal, are actually provided to some parts of Yuba County by private concerns through contract arrangements with public agencies. Some utilities, including natural and bottled gas, electricity, telephone, and cable television, are also not publicly owned, but rather are provided by privately operated business concerns. Of these services and utilities, all are discussed herein except fire protection, which has been addressed in Section 9.0 above under the heading of Public Safety.

13.1 LAW ENFORCEMENT

13.1.1 Yuba County Sheriff's Department

The Yuba County Sheriff's Department, headquartered in Marysville, provides law enforcement and police protection throughout the unincorporated area of Yuba County. The County Jail is located in the County Courthouse in Marysville and is now being expanded. The Sheriff's Department employs 72 sworn personnel (including 19 deputies assigned to the jail) and 22 non-sworn personnel. When the jail expansion is completed, 34 additional people will be required to staff it (QUAD Consultants, August 1992). The Department operates 36 police vehicles (Marysville Medical Group and Yuba-Sutter Chamber of Commerce, *Yuba-Sutter Economic Profile*).

The Department operates a substation at Brownsville with five deputies, who serve the entire foothill area of Yuba County. The Department also maintains a reserve corps. The Department receives an average of 44 calls per day (Castrillo & Associates 1991:M-1).

The current staffing ratio of sworn personnel (excluding the jail staff) to the service area population is approximately 1.38 officers per 1,000 people. This exceeds the commonly applied standard of 1.00 per 1,000 (David M. Griffith Associates, Ltd. 1992).



As the population of the unincorporated portions of the county increases, the Department's law enforcement capabilities must expand. The Sheriff has identified a need for a substation south of Marysville, expansion of the Marysville headquarters in proportion to increasing law enforcement demands, and other facilities and equipment. Demand is expected to increase at least as fast as population. Also, between 1992 and 2010, the County will be required to expand its courts and criminal justice departments (including the Sheriff's Department and the jail system) to accommodate a growing population (David M. Griffith Associates, Ltd. 1992).

13.1.2 City of Marysville Police Department

The City of Marysville Police Department provides law enforcement services within the Marysville city limits. The Department currently has 23 full-time sworn personnel and maintains 15 vehicles. The police station is located in City Hall at 526 "C" Street, downtown Marysville. The Department's services include criminal investigations, enforcement (including three patrol beats, parking patrols, and abandoned vehicle patrols), and administration. The Chief of Police, John M. Simpson, indicated that the per capita rate of calls for service is high. This is attributed to the relatively high number of social service agencies located in the City, including temporary shelters and drug and alcohol recovery centers, many of which serve both Yuba and Sutter counties (QUAD Consultants 1992:37; Marysville Medical Group and Yuba-Sutter Chamber of Commerce, *Yuba-Sutter Economic Profile*). The 1990 City of Marysville population was reported by SACOG (1990) to be 12,250. The average population growth rate for the five year period between 1986 and 1990 was about 2.7 percent. The present City population is estimated at 12,921. The staffing ratio is calculated at approximately 1.78 officers per 1,000 people. This is well above the common standard of 1.00 per 1,000.

13.1.3 City of Wheatland Police Department

The Wheatland Police Department, headquartered at 413 2nd Street, Wheatland, employs six sworn officers and one non-sworn dispatcher/secretary. Routine operations of the Department are confined within city limits, but the Department responds to requests for assistance from other law enforcement agencies, including Placer County, Sutter County, and Yuba County Sheriff's Offices, the Lincoln Police Department, and California Highway Patrol. The Department handles its own dispatching from 8:00 AM



to 5:00 PM, Mondays through Fridays, excluding holidays. During all other times, calls are dispatched through the Yuba County Sheriff's Office (John D. Meares, Chief of Police, Wheatland Police Department, pers. comm., August 1992). According to statistics of SACOG (1990), the 1990 population of Wheatland was 1,920. The average growth rate for the five years between 1986 and 1990 was 2.6 percent. Based on these statistics, it is estimated that the current population is about 2,020. The staffing ratio is thus approximately three officers per 1,000 people, which is a relatively high ratio.

13.1.4 California Highway Patrol

The California Highway Patrol provides services to Yuba and Sutter counties from its office at 1619 Poole Boulevard, Yuba City. This office employs 26 road patrol officers plus supervisory, administrative, and support staff. A single resident officer is stationed in the Challenge-LaPorte area. The service area for this office includes all unincorporated roadways within the two counties, with a primary emphasis on state Routes, including State Routes 20, 65, and 70 (Sergeant Nicholau, California Highway Patrol, Yuba City, pers. comm., September, 1992).

13.1.5 Interagency Cooperation and Agreements

The CHP participates in mutual aid response agreements with Sutter and Yuba County Sheriffs, and will provide assistance during emergencies at the request of either Sheriff's Department (Sergeant Nicholau, California Highway Patrol, Yuba City, pers. comm., September 1992).

The Yuba County Sheriff's Department participates in a Mutual Aid Network with other state and county law enforcement agencies in the region as required by State law. The Sheriff's Department has informal emergency mutual assistance agreements with the police departments of Marysville and Wheatland. The Department also provides dispatching services to the City of Wheatland Police Department under an informal agreement. The County may seek to formalize this agreement sometime in the near future and charge the City of Wheatland for these services. The City of Marysville has also expressed interest from time to time in entering into a formal agreement with the Sheriff's Department to provide dispatching services for the Marysville Police Department (Sheriff Gary Tindel, Yuba County Sheriff's Office, pers. comm., November 1992).



13.1.6 Law Enforcement Related Planning

Most or all law enforcement agencies in Yuba County have favorable staffing ratios, well above the standard of one sworn officer per 1,000 population. With the rate of development within the county increasing, these ratios can drop quickly, placing a relatively greater burden on law enforcement agencies to provide adequate public protection. It is essential to plan for adequate law enforcement protection in the face of such growth. Thus, it is necessary that every appropriate law enforcement agency be given an opportunity to comment on Notices of Preparation, Initial Studies, Negative Declarations, and Draft EIRs for all projects pending within their jurisdictions. If such agencies, in their responses to these CEQA documents, comment that a project will adversely affect their service capabilities, the Lead Agency must assume that law enforcement services will face project-related impacts that must be mitigated. Mitigation is best accomplished by means of a fee structure to which the developer should make an appropriate contribution. This fee structure provides for such needs as additional law enforcement personnel, equipment (i.e., patrol cars, radios), and facilities (i.e., office space, jail space). The County recently adopted a developer impact fee structure which includes law enforcement, based on the work contained in the *Yuba County Development Impact Fee Study* (David M. Griffith Associates, Ltd., 1992). See Section 13.11.2 for additional discussion of fees.

Mitigation can also be provided for impacts to law enforcement services in other forms. For residential and commercial projects in particular, new development should be designed to discourage criminal activity. For example, access and lighting can be planned to discourage some criminal activity, which in turn, will alleviate some of the impact on law enforcement services. Building standards should provide for security through proper lighting and requirements for solid doors and dead bolt locks. At the discretion of homeowners' associations, covenants, conditions and restrictions (CC&Rs) and building standards could also include requirements for home and business security systems. Neighborhood watch programs are also effective in discouraging crime. All efforts to discourage crime through planning will help offset pressures on law enforcement services.



13.2 SOLID WASTE DISPOSAL

13.2.1 Landfills and Landfill Capacity

According to the *Bi-County Solid Waste Management Plan* (SWMP), there are three primary landfills within the Sutter-Yuba bi-county area that accept wastes from the general public. However, the primary disposal site for Yuba County is the sanitary landfill on State Route 20 near the northeast corner of the City of Marysville. This facility is owned and operated by Yuba-Sutter Disposal, Inc. (YSDI). YSDI is also the sole authorized collector of residential and commercial refuse in the bi-county area. Aside from the three landfill sites that are open to the public, there are sanitary landfills at Beale Air Force Base, the Quinco Corporation Disposal Site, and the Speckertt Disposal Area. Proposed future landfills are discussed in Section 18.1.

13.2.1.1 YSDI Landfill

The YSDI landfill occupies 124 acres, of which 74 acres have already been used for refuse disposal. The remaining landfill capacity is represented by the remaining 50 acres located on the north of the parcel. No more than two to three acres are in active use at any given time. When YSDI sought permits to expand the landfill in 1979, the expansion area was divided into two parts. The south area is located south of the Hog Farm Drainage Ditch and the north area is that portion north of the ditch. Since 1979, the south area has been the principal area of disposal. It was filled and covered in summer 1989. By August 1988, operations had begun in the north area (Sutter-Yuba Bi-County Solid Waste Authority 1989:10).

In May 1989, the remaining capacity of the north area was estimated at about 1.73 million cubic yards or just over one million tons. Assuming an average increase of three percent in the annual refuse stream, the remaining life of the north area at that time was calculated at 8.4 years. Along with an estimated two months remaining life in the south area, the total remaining life of the landfill in May 1989 was 8.6 years (Sutter-Yuba Bi-County Solid Waste Authority 1989:10-11).

A distinction should be made between actual landfill capacity and permitted capacity. The YSDI landfill operates under a Conditional



Use Permit (CUP) issued by the City of Marysville for the life of the landfill. In addition to the CUP, however, the landfill must also have an operating permit from the State Reclamation Board. The Board issued a five year permit in 1980 for expansion. The permit limited expansion to the so-called south area in deference to opponents of landfill expansion and against recommendations of the Bi-County Solid Waste Authority staff. The 1985 permit renewal also restricted expansion to the south area for the next five year period. However, as of May 1989, this area had only two months remaining capacity. On March 18, 1988, at YSDI request, the Reclamation Board voted to remove the restriction on developing the north area.

At the same time, a permit extension to March 1995 was approved. The intent of the Board in taking this action was to extend the permit to cover the remaining life of the landfill. The landfill may have remaining capacity when this permit expires, but since the permit covers all areas of the landfill that could be used to receive refuse, there are no problems anticipated in renewing that permit in 1995 (Sutter-Yuba Bi-County Solid Waste Authority 1989:11-12). This example illustrates that, in some cases, the *actual* capacity of a landfill could go unused if no permit is issued by the Reclamation Board to utilize that capacity (i.e., *permitted* capacity).

13.2.1.2 YSDA Landfill

The second landfill in the county is the privately owned and operated Yuba-Sutter Disposal Area (YSDA). It is located immediately adjacent to the YSDI facility on State Route 20 in an unincorporated portion of Yuba County. This 188 acre facility has only 29.2 acres permitted for refuse disposal, of which over 19 acres had already been used as of May 1989. Thus, actual capacity greatly exceeds currently permitted capacity. Assuming a remaining volume of 250,000 cubic yards annually available in the permitted area and a disposal rate of about 20,000 cubic yards annually, the expected life was estimated at 12.5 years (Sutter-Yuba Bi-County Solid Waste Authority 1989:11).

This landfill has had a recent history of non-compliance with various sections of State law regulating sanitary landfills. The California Waste Management Board (CWMB) placed the facility on the list of



Non-Compliant Facilities in June 1984. Through efforts of various state and local agencies, the site was removed from the list in July 1988.

13.2.1.3 Ponderosa Landfill

The third landfill is the Ponderosa landfill on Ponderosa Way near Brownsville (Figure 8-3). It is maintained by the Yuba County Public Works Department on land administered by the Bureau of Land Management. This 40 acre site has a design capacity of 450,000 cubic yards, of which 150,000 cubic yards had been developed as of 1989. At the current annual disposal rate of about 11,000 cubic yards, the facility was estimated in 1989 to have a life expectancy of 27 years (Sutter-Yuba Bi-County Solid Waste Authority 1989:11). Although capacity remains, this facility was recently closed and converted to a transfer station by Yuba County (Rick Helman, Senior Planner, Yuba County Planning and Building Services Department, pers. comm., October 1992).

13.3 HEALTH SERVICES

The Yuba-Sutter bi-county area is serviced by two acute care hospitals with a total 240 bed capacity, one emergency medical center, two health clinics, three convalescent hospitals, 11 rest homes, two senior citizen homes with a total of 140 apartments (Olive Tree Senior Citizen Apartments in Olivehurst and Christian Manor Senior Citizen Apartments in Marysville), 115 physicians and surgeons, 56 dentists, 10 optometrists, two opticians, and 15 chiropractors (Marysville Medical Group and Yuba-Sutter Chamber of Commerce, *Yuba-Sutter Economic Profile* n.d.:6). Also in Marysville, at 812 4th Street, is the Twin Cities Surgicenter, Inc. Two privately operated walk-in health clinics are located in Yuba City.

Peach Tree Clinic (formerly Yuba General Medical Clinic), 6000 Lindhurst Avenue, Suite 601-A, Marysville, is a County-operated facility that provides comprehensive health care services to MediCal, Medicare, and private patients in Yuba County. The clinic provides general medical treatment, urgent care, workers' compensation and industrial injury treatment, laboratory and radiological services, pharmacy, school/sport physical, and well-baby care on an appointment or walk-in basis (County of Yuba 1992:8).



Yuba Feather Health Care Center is privately owned and provides various health services in the Brownsville area. Staff includes physicians, a dentist, an optometrist, and a pharmacist (*Yuba County General Plan, Land Use Element*, amended December 1988).

Of the two acute care hospitals in the bi-county area, one is situated in Yuba County. Rideout Memorial Hospital, located at 726 4th Street, Marysville, is a licensed, accredited, non-profit community hospital offering acute care and skilled nursing care. It maintains medical, surgical, pediatric and intensive care/cardiac care services along with its fully-staffed 24-hour Emergency Center. As a result of a remodeling and building project in the late 1980s, the entire 128 bed facility is either new or remodeled (*Yuba County General Plan, Land Use Element*, amended December 1988). As of late 1992, a facility expansion was underway that entailed the addition of a new four-story building (Rick Helman, Senior Planner, Yuba County Planning and Building Services Department, pers. comm., October 1992).

The Yuba County Health Department, 6000 Lindhurst Avenue, Marysville, provides well-child, immunization, family planning, pregnancy testing, and other clinical services. Medi-Care for Seniors and Yuba-Sutter Non-Emergency Transportation provide transportation services for senior citizens and wheelchair users. For emergency medical transportation, Bi-County Ambulance Service, located in Yuba City, serves Yuba and Sutter counties. Convalescent/nursing homes in Yuba County include:

- Joshuan Care Home, Marysville
- Marysville Care Center, Marysville
- Sunshine Care Home I, Marysville

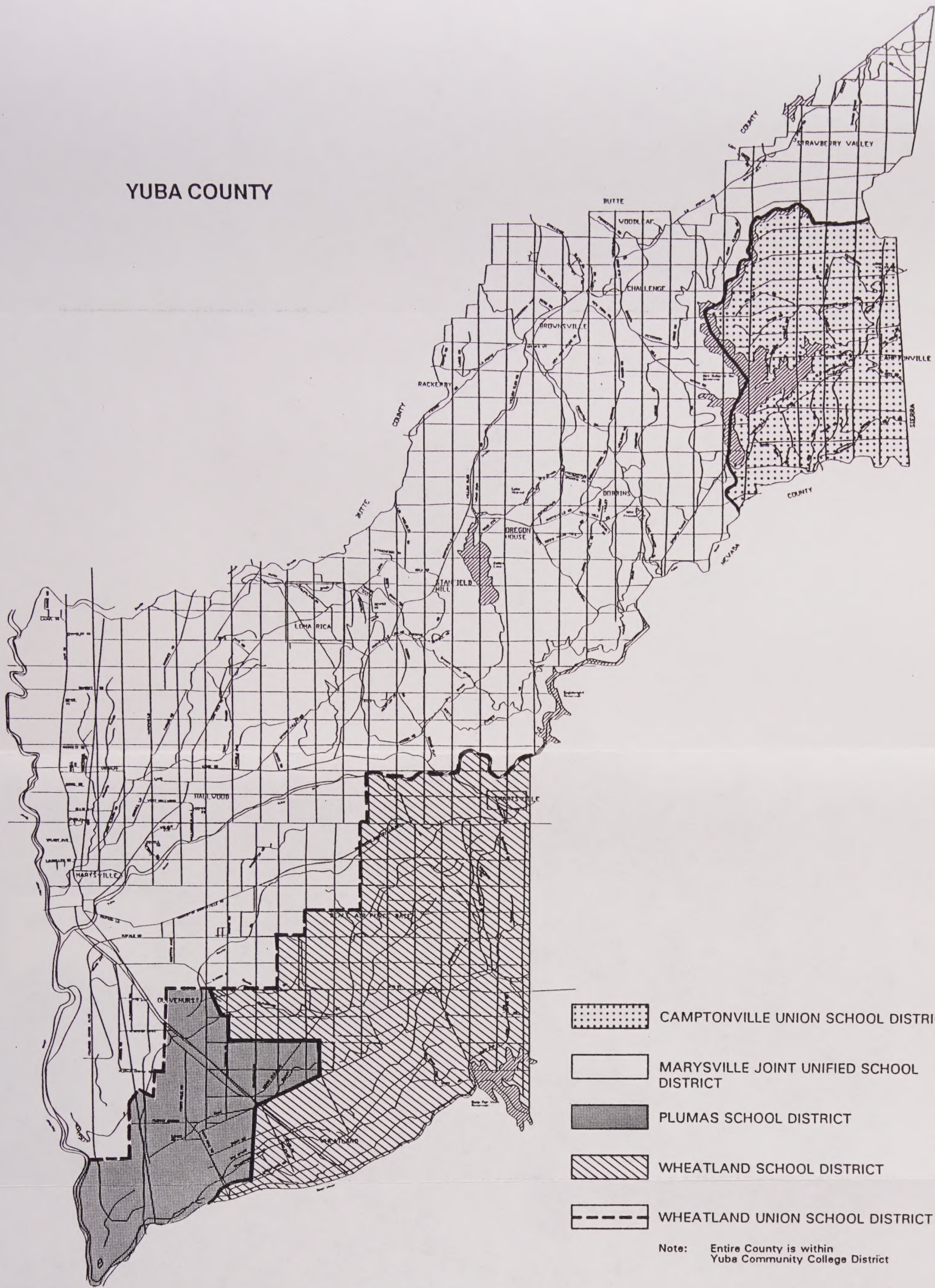
13.4 SCHOOLS AND EDUCATION

13.4.1 Schools

Yuba County has six school districts (Figure 13-1), each with its own Board of Trustees. The school districts are:

- Camptonville Union School District
- Plumas School District
- Wheatland School District

YUBA COUNTY



SOURCE: Yuba County Planning & Building Services; Yuba County Superintendent of Schools.



- Wheatland Union High School District
- Marysville Joint Unified School District
- Yuba Community College District

The county has 19 public elementary schools, five public junior high or intermediate schools, three public high schools, including one each in Marysville and Wheatland; one continuation high school; and one community college, Yuba College (*Yuba County General Plan, Land Use Element* 1988:64; Yuba County Office of Education 1991-92). Public schools are listed in Table 13-1. There are also parochial schools within the county operated by several religious organizations, schools for mentally retarded and physically handicapped students, and other specialized schools operated by the Office of the Superintendent of Schools.

Aside from public schools, the Yuba County Office of Education administers a Job Partnership and Training Act (JPTA) Vocational Center in Marysville, the Agnes Weber Meade School for special education in Marysville, the Anna Bell Karr School for visually impaired students in Marysville, the Goldfield School for special education in Olivehurst, the Harry P. B. Carden School in Marysville, which is a Juvenile Hall school whose students are incarcerated and assigned by the Court system, the Spring Valley School for special education in Marysville, and the Thomas E. Mathews School in Marysville, which is a "community school" for students in grades seven and above who have been expelled from other public schools (Barbara Natale, Special Education Secretary, Yuba County Office of Education, pers. comm., September 1992; Yuba County Office of Education 1991-92).

In addition to their normal public school programs, the Marysville Joint Unified School District operates programs for adult education, gifted and talented students, a JPTA vocational program, a Genesis Program at Johnson Park School, and an American Indian Education Program (Yuba County Office of Education 1991-92).

13.4.2 School Capacity and Overcrowding

Marysville Joint Unified School District covers most of central and northern Yuba County and a portion of Butte County. This District encompasses both urban and rural areas. It is much easier and less expensive, in terms of per student costs per year, to build, maintain, and operate schools in urban



TABLE 13-1
YUBA COUNTY PUBLIC SCHOOLS

SCHOOL	GRADES	CAPACITY	ENROLLMENT
Marysville Joint Unified School District			
<u>ELEMENTARY SCHOOLS</u>			
Arboga	K-5	210 ¹	162 ²
Browns Valley	K-4	180	128
Cedar Lane	K-5	810	923*
Cordua	K-8	150	140
Covillaud	K-5	390	413
Dobbins	K-5	150	160
Ella	K-5	540	612*
Johnson Park	K-5	330	327
Kynoch	K-5	720	777*
Linda	K-5	840	932*
Loma Rica	K-4	180	149
Olivehurst	K-5	570	586*
Rose Bar	K-8	30	14
Yuba Feather	K-8	420	365*
<u>INTERMEDIATE SCHOOLS</u>			
Alicia	6-8	690	613*
Foothill	5-8	420	315*
McKenney	6-8	660	518*
Yuba Gardens	6-8	660	562*
<u>HIGH SCHOOLS</u>			
Lindhurst	9-12	1,276	1,179*
Marysville	9-12	986	918*



SCHOOL	GRADES	CAPACITY	ENROLLMENT
W. T. Ellis Continuation	9-12	225	151
Wheatland Union High School District			
Wheatland High School	9-12	1,000	496
Wheatland School District			
<u>ELEMENTARY SCHOOLS</u>			
Far West (Beale Air Force Base)	4-6	426	316
Lone Tree (Beale Air Force Base)	K-3	1,208	639
Wheatland	K-3	243	241
<u>INTERMEDIATE SCHOOL</u>			
Bear River	4-8	619	484
Camptonville Union School District			
Camptonville	K-8	129	129
Plumas School District			
Plumas	K-5	100	62

* Includes Special Education enrollment.

¹ Capacity figures for the Marysville Joint Unified School District are for September 1991 and derive from Shilts Consultants, Inc. (1990:29). Capacity figures for the Wheatland School District are for 1990 and were provided by District staff. Capacity figures for Wheatland High School are current and were provided by Wheatland Union High School District staff. Capacity figures for Camptonville School are very approximate and were provided by Camptonville Union School District staff. Current enrollment is 129, and staff stated that more space and teachers would be required to accommodate more students. Approximate capacity figures for Plumas School District were provided by District staff and are based on the total of three classrooms in Plumas School. Some school capacity figures disagree with those shown on page 65 of the Yuba County General Plan current Land Use Element. Figures shown in this table that differ from those in the Land Use Element are from the Draft Marysville Joint Unified School District Ten Year Master Plan prepared by a consultant to the District (Shilts Consultants, Inc. 1990). These figures ultimately originated at the District and are considered to be the most current.

² Enrollment figures for all schools in Marysville Joint Unified School District are from October 1990 and derive from Shilts Consultants, Inc. (1990:10-11). Enrollment figures for Wheatland School District are for the end of the 1991-92 school year and were provided by District staff. Enrollment figures for Wheatland High School are for the 1992-93 school year and were provided by Wheatland Union High School District staff. Enrollment figures for Camptonville School are for the 1992-93 school year and were provided by Camptonville Union School District staff. Enrollment figures for Plumas School are for the 1992-93 school year and were provided by Plumas School District staff.

Source: See footnotes above.



environments than in rural areas, where students are fewer in numbers and far more dispersed geographically. Growth in this District during the four year period between the 1987-88 school year and the 1990-91 school year averaged 4.1 percent. The growth rate for the 1990-91 school year was 5.6 percent (Shilts Consultants, Inc. 1990:6).

According to the Marysville Joint Unified School District *Ten Year Master Plan*, at the end of 1990, total enrollment was 9,719 students plus 225 special education students. The September 1991 capacity was 10,437 students. Thus, not counting the special education enrollment, there was an estimated unused capacity of 718 students. This excess capacity was in intermediate and high school levels; none of the four intermediate schools, two high schools, and one continuation high school were overcrowded. There were a net 82 more students enrolled in the 14 elementary schools than capacity. Of the 14 elementary schools, eight had excess capacity, and six were overcrowded. Most overcrowded was Cedar Lane School, which had 94 more students than capacity (Shilts Consultants, Inc. 1990:10-11).

There are two sources of unprecedented growth in school population: rising birth rate in the county and new development. At the end of 1990, it was projected that the combined effect of the birth rate increase and projected new development would be an increase in enrollment of approximately 25,500 students over the next ten years. This growth will require expansion of almost all existing schools within the District and construction of 21 new schools along with support facilities (Shilts Consultants, Inc. 1990:1-2). The rapidly rising growth rate also explains why overcrowding has affected the elementary schools more than the intermediate and high schools. Over the next ten years, however, overcrowding will affect all schools as the growing population of younger students continues through the school system.

The problem of overcrowding cannot be separated entirely from the problem of funding new or expanded school facilities. While the Marysville Joint Unified School District awaits funding for expansion needs from the State Allocation Board, it may need to alleviate its overcrowding problem by placing many K-6 students on a Year-Round Education (YRE) calendar. The most viable funding source other than the State Allocation Board is developer fees imposed as project mitigation. The Yuba County Board of Supervisors recently adopted a revised fee schedule for schools (see Section 13.11.2). The Marysville Joint Unified School District *Ten Year Master Plan* also suggests



that overcrowding might be reduced by realigning attendance boundaries to optimize space utilization. Expanding existing schools to optimum size, which is defined as the size that is most economical and efficient to operate in terms of cost per student, will also help resolve the interrelated problems of overcrowding and funding shortfalls. Finally, the *Master Plan* proposes to close Rose Bar School, which because of its size, is very inefficient to operate (Shilts Consultants, Inc. 1990:3).

Enrollment figures in Table 13-1 for Wheatland School District are for the end of the 1991-92 school year. The most recent available school capacity figures are from a 1990 study completed for the District (Sandra K. Derby, Accounting Technician, Wheatland School District, pers. comm., September 1992). Total District-wide capacity is 2,496 students compared to an enrollment of 1,680. The excess capacity is 816. This figure, however, is deceptive. The two schools on Beale Air Force Base are operating well below capacity, presumably because of reductions in military staff in recent years. However, Wheatland School is now at or slightly above capacity, and growth is certain to continue as both birth rate and development increase. As these children advance toward intermediate school age, Bear River Intermediate School will also become increasingly crowded. Thus, while it appears that there is considerable excess capacity District-wide, most of that excess is on the Air Force Base. The two schools that are not on the Base will soon experience overcrowding.

Wheatland School District estimates the current "yield rate" for grades K-8 at 0.59 student per single family dwelling. The District's Master Plan establishes the optimal capacity of K-5 elementary schools at 600 students and 6-8 middle schools at 800 students. Among the District's concerns are that planning for the new subdivisions consider the size of schools planned, the District's yield rate, and State Department of Education school siting criteria. Similarly, new development planning should provide for foot paths, bicycle trails, and safe bus routing needs to ensure safe transport for students to and from school. The District would welcome the opportunity to purchase school sites in new developments that meet State Board of Education criteria (Pat Nordquist, Assistant Superintendent, Wheatland School District, December 15, 1992, letter of comment on the Notice of Preparation of the Environmental Impact Replot for the Yuba County General Plan Update).



Wheatland Union High School District operates Wheatland High School. The school capacity is 1,000 students, and current enrollment for the 1992-93 school year is 496. The capacity was designed to accommodate students from Beale Air Force Base, but with the removal of B-52s and closure of many other base facilities, enrollment in Wheatland High School has dropped. Overcrowding in the near future is not presently anticipated, but the District is aware of a number of development proposals within District boundaries that could quickly alter the situation (Gwyn DeRenne, Superintendent's Secretary, Wheatland Union High School District, pers. comm., September 1992).

The Wheatland Union High School District projects an average of 0.18 high school age students (grades 9-12) per new household. The District expects that new high schools eventually will be needed as a result of growth and development, each of which would serve about 1,000 to 1,200 students and require 40-45 usable acres. Such suitable sites that meet the State Board of Education's criteria and are acceptable to local residents are difficult to find and therefore, sites should be identified early in the planning stage for new developments. Because much of the proposed new development would occur east of Beale Air Force Base, bus transportation would be required to bring students to the Wheatland High School, at least initially until such time as new high schools are built in the vicinity of new development. The District is concerned about roadway access from the eastern portions of the District to the existing school. Presumably, new school facilities funding would be facilitated by the County's adopted mitigation fees for new development (Michael J. Edwards, Superintendent/Principal, Wheatland Union High School District, December 4, 1992, letter of comment on the Notice of Preparation of the Environmental Impact Report for the Yuba County General Plan Update).

The Camptonville School, which accommodates grades K-8, has a current enrollment of 129 students and is just about at capacity. According to school secretary, Skip Ness (pers. comm., September 1992), "more space and teachers would be needed for additional students." Ms. Ness stated that the enrollment is slightly lower than last year.

The Plumas School District operates a single school, Plumas School, which accommodates grades K-8. Current enrollment is 62 students. The school has three classrooms, and thus capacity is considered to be approximately 100.



Overcrowding is not anticipated during the next year, but may become a problem in two years due to proposed development projects within District boundaries (Jonell Fonderhide, Secretary, Plumas School District, pers. comm., September 1992).

Yuba College, a two-year community college, provides both traditional college academic and vocational courses. In addition to its main campus in Linda, Yuba College operates satellite campuses in Woodland (Yolo County) and Clearlake (Lake County). Additionally, individual classes are offered at a variety of off-campus locations, including centers in Colusa and Beale Air Force Base. The District covers 4,192 square miles and serves nearly 250,000 people, mainly in the Marysville-Yuba City and Woodland areas.

Total 1990 District-wide enrollment, including day, evening, and non-credit enrollment, was 10,003. Projected total enrollments for 1991 and 1992 were 9,730 and 10,110, respectively (Yuba Community College District 1992). Enrollment for the 1992 Fall term at the main campus is 5,926 (Connie Elder, Registrar, Yuba Community College District, pers. comm., September 1992). This is approximately 75 percent of capacity for the main campus. Overcrowding of this campus is not anticipated within the next few years, but the current enrollment growth rate of 3-5 percent is expected to rise over the next few years due to development within District boundaries. An extensive building program is currently being initiated to accommodate future growth. An architect will probably be retained next year to begin planning for two new instructional buildings on the main campus. The Woodland campus is experiencing 10 percent annual growth, but the growth had been anticipated; new facilities are being constructed at that campus to accommodate the growing enrollment (Karen Morrison, Facilities Assistant, Yuba Community College District, pers. comm., September 1992).

Regarding long-term growth and capacity, a recently drafted study indicates that by the year 2010, the Linda campus may have an enrollment of 20,000. It is expected that the Woodland campus enrollment will be even greater by this time. If a major proposed South Sutter development is approved, there are plans for a fourth campus of 150 acres to be established just north of the Sacramento County line. Growth in the area served by the Lake County campus is not expected to be as great. This campus is expected to serve about 4,000 students within the next 20 years. Each year, the District must submit an updated *Five-Year Facilities Construction Plan* to the state in which



requirements for campus expansion to accommodate growth are analyzed. The Plan for this District has already identified expansion needs for the next 20 years based on growth projections (Morrison, pers. comm., September 1992).

13.4.3 School Site Selection Criteria

The California Department of Education has published a *School Site Selection and Approval Guide* (1989). The *Guide* is supplemented by a May 1993 policy update on the issue of high voltage power lines in proximity to school sites.

According to the *Guide* (California Department of Education 1989:2-3), the following 12 criteria commonly affect school site selection:

Safety	Environment	Size and Shape
Location	Soils	Topography
Accessibility	Utilities	Political Implications
Public Services	Cost	Availability

Districts applying for state school building funds are required to present three potential school sites from which an appropriate site can be selected for review by the School Facilities Planning Division of the California Department of Education.

Among the safety factors to be considered are: 1) proximity to airports, 2) proximity to high voltage power transmission lines, 3) toxic and hazardous substances, 4) geologic hazards and soils constraints, 5) traffic and school bus safety conditions, and 6) joint use safety studies (i.e., where the school site may be used in conjunction with park districts or other joint users) (California Department of Education 1989:3).

Site selection and evaluation criteria for proximity to airports are contained in *Education Code* Sections 39005 through 39007. If a proposed school site is within two miles of an airport runway, the *Guide* requires the school district to follow the following procedures:



- provide two location maps of the site in relation to the airport location
- request the Department of Transportation (Caltrans, Division of Aeronautics to investigate the site and make a recommendation to the Department of Education
- if Caltrans does not recommend against the site, the Department of Education will advise the district to proceed with the necessary documents for site approval
- if Caltrans and the Department of Education do not favor acquisition of the site due to airport proximity, the district may not acquire the site until 40 days after the Department's report is received by the school district and read at public hearings; if state, county, or district funds are to be used for site acquisition and Caltrans has reported unfavorably on the site, acquisition of the site can proceed only with express approval of the Department of Education and the State Allocation Board pursuant to the *Education Code*

Although detrimental health effects associated with exposure to power transmission lines have not been confirmed, Board of Education policy takes a conservative approach when reviewing school siting in proximity to power liens. The criteria are that school sites must be:

- 100 feet from edge of easement for 50-133 kV lines
- 150 feet from edge of easement for 220-230 kV lines
- 350 feet from edge of easement for 500-550 kV lines

The Board of Education's 1993 policy statement regarding power transmission lines states that the site selection team should determine whether it is necessary to acquire a site near a power line easement or if other options are available. The site selection team also is encouraged to contact the utility company regarding plans to increase the voltage on existing lines or construct additional lines within the easement.



The site selection team is required to address potentially toxic and hazardous substances. The *Guide* recommends that special consideration be given to potential on-site dumping of such substances and proximity of the site to dump sites, chemical plants, abandoned farms and dairies, and agricultural areas where pesticides and fertilizers have been heavily used. The team also should consider proximity to potential nuisances, such as a stockyard, fertilizer plant, soil processing operation, or sewage treatment facility (Department of Education 1980:5).

Consideration of potential geologic/seismic hazards and traffic safety issues generally require formal analyses by appropriate experts. Joint-use safety studies are necessary when the proposed school site will accommodate non-school uses, such as recreation. Particular attention, in these cases, should be paid to placement of public parking areas and rest rooms in relation to classrooms and student play areas (Department of Education 1989:5-6).

The *Guide* does not imply that the above criteria are the only considerations that a district may need to address in selecting a school site. One very important factor is community support or resistance. While most citizens recognize the need for and support public education, many neighborhoods resist schools in their midst due to concerns about traffic, noise, light and glare, trespass and vandalism, property values and other factors.

13.5 PARKS AND RECREATION

13.5.1 Parks and Recreation Facilities

Except as otherwise noted, information for this section derives from the *Yuba County General Plan, Land Use Element* (amended 1988).

According to the records of the Yuba County Planning and Building Services Department (James P. Manning, Deputy Director, pers. comm., May 1991; Rick Helman, Senior Planner, pers. comm., October 1992), Yuba County contains 572 acres of neighborhood and community park and recreation facilities that are accessible to the public. Of these 572 acres, 267 acres are within the City of Marysville, and include Riverfront Park, Ellis Lake and scattered neighborhood parks. Olivehurst Public Utility District oversees 13 acres of neighborhood parkland. The City of Wheatland maintains 5 1/2 acres of parkland. Ponderosa Park in Brownsville is a 40-acre improved park



maintained by Yuba Feather Community Services, Inc. The remaining 247 acres are administered by the County Public Works Department and are identified as follows:

● 4-H Camp near New Bullards Bar Reservoir	86 acres
● Star Bend Boat Launch along the Feather River	9 acres
● East Linda Park	8 acres
● West Linda Park	21 acres
● Hammon Grove Park near Browns Valley	7 acres
● Shad Pad	41 acres
● Park facilities within the East Linda Specific Plan area	75 acres

There are numerous rivers, creeks, and reservoirs in Yuba County that are extensively utilized for recreation. Many of these are not fully developed but can be developed in the future. A partial listing of recreational areas in the county includes:

- **Rivers:** Where access is available, fishing, picnicking, rafting, tubing, and swimming are the dominant recreational uses of the Feather, Yuba, and Bear rivers. The Feather and Yuba rivers offer excellent American shad, king salmon, and steelhead fishing.
- **Lakes and Reservoirs:** Developed day use and overnight facilities for camping, picnicking, and boating are available at Camp Far West, Lake Mildred (Thousand Trails, Inc.), Lake Francis, Merle Collins Reservoir, Englebright, and New Bullards Bar Reservoir.
- **Forests:** The Tahoe and Plumas National Forests occupy more than 56,000 acres of land in northeastern Yuba County. The forests offer hunting, fishing, camping, hiking, and other recreational opportunities. The 11,200 acre Spenceville Wildlife and Recreation Area, managed by the State of California, provides picnicking, fishing, hunting, and hiking. The Forest Service operates campgrounds at New Bullards Bar Reservoir (Pepper Campground with boat launch and marina) and along State Route 49 (Oregon Creek and Frog Hollow).



Within the City of Marysville, parks and recreation facilities are maintained according to a "population ratio" standard, which relates park area by size and type to the population served as provided by the *Marysville General Plan Open Space, Conservation, and Recreation Element*. Marysville has a well-developed park system that includes three mini-parks, 12 neighborhood parks, the Ellis/North Ellis Lakes Community Park, and River Front Regional Park. In addition, public school grounds augment the City's recreation facilities. Although in 1985, the *Marysville General Plan* identified a need for approximately 105 acres of additional parks in the form of four neighborhood parks, one community park, and one regional park, the existing park facilities, totaling 267 acres, exceeded *General Plan* standards by almost threefold. As of 1992, although Marysville's population has increased, the total amount of parkland still exceeds the standard (QUAD Consultants, May 1992:45).

The Olivehurst Public Utility District (OPUD) provides community park facilities within District boundaries. OPUD operates a community/recreation center, a youth center, five parks totaling 13 acres and a community pool (QUAD Consultants, August 1992:3-122). Recent budgetary problems have created park maintenance difficulties for the District.

The City of Wheatland currently has one five-acre park site located between C Street and the Southern Pacific Railroad tracks on the east side of Highway 65 and a half-acre mini-park (Tomita) along Front Street. Based on a 1990 population of 1,893, these two sites represent one acre of park per 380 people. In order to maintain something close to this ratio in the face of projected growth through the year 1995, the City has proposed in its *1995 Specific Plan* that approximately three new parks be dedicated in new areas of development for light recreational use (picnics, play areas for toddlers, bike riding, unorganized recreation). These would be neighborhood parks for the areas they occupy. Minimal or no parking would be provided to discourage use by persons outside the neighborhood. Total estimated area of these parks will be about 10-12 acres. In addition to these proposed neighborhood parks, the City is negotiating with the Wheatland School District to jointly develop a portion of a 40-acre vacant school property west of the Bear River School for baseball, football, and soccer fields. Approximately 10 acres would be involved. The City is also holding very preliminary discussions with the Wheatland School District and Wheatland Union High School District about the possibility of developing a swimming facility for use by the two Districts



and the public. Probable location would be at the high school or the 40-acre site mentioned above (City of Wheatland 1990:7-8).

13.5.2 Parks and Recreation Planning and Funding

Yuba County's current system of parks and recreational facilities is limited in scope, and the County does not have a parks and recreation department. However, the Board of Supervisors has begun defining parks and recreation policies (David M. Griffith & Associates, Ltd. 1992:8-1). The County recently adopted a park land acquisition ordinance pursuant to the Quimby Act and approved plans for an extensive bicycle and trails network. The Yuba County Subdivision Ordinance requires park land dedication to the County of five acres per 1,000 population. Wetlands set-asides and powerline setbacks required as project mitigation measures may not be used to satisfy park land dedication requirements.

In addition to the Subdivision Ordinance standard of five acres per 1,000 people in the unincorporated area, David M. Griffith & Associates, Ltd. (1992:8-1 - 8-3) suggested a formula for determining and meeting parks and recreation needs for new development based on the *per capita* investment in existing facilities. The Griffith & Associates study of development impact fees in Yuba County found that the existing parks and recreation facilities represent an investment of \$22.71/Capita. The study suggested that existing levels of parks and recreation service could be maintained in the face of growth by charging developer fees for residential projects equal to the *per capita* rate shown above multiplied by the number of residents added by the project. This fee component would be targeted explicitly for parks and recreation acquisitions and improvements. The County Board of Supervisors recently adopted developer fees based on the findings of the Griffith study. See Section 13.11.2 for additional fee discussion.

It is important that the goals, policies, and implementation programs of the updated *General Plan* conform to the Quimby Ordinance. Thus, if the updated *General Plan* reflects goals, policies, and implementation programs for parks and recreation that are not precisely in conformance with the existing Quimby Ordinance, that ordinance may have to be amended. Land dedicated or fees paid pursuant to a Quimby Ordinance can be used for acquiring and developing new parks or rehabilitating existing facilities needed to serve new development.



The enabling legislation for adoption of a Quimby ordinance is contained in Section 66477 of the Government Code. Once adopted, the local legislative body may require dedication of land, payment of in-lieu fees, or a combination of the two for parks and recreational purposes as a condition of tentative or parcel map approval. The ordinance must include standards for determining the amount of land to be dedicated or fee to be paid based on the residential density of the proposed subdivision and the average number of persons per household (based on the most recent available federal census data). The dedication or payment required cannot exceed the proportionate amount necessary to provide three acres of park land per 1,000 persons proposed to reside in the subdivision, unless the ratio of existing park land per capita is higher. In such cases, the legislative body may adopt a higher standard not to exceed five acres per 1,000 residents.

Section 66477 includes additional specifications for inclusion in a Quimby ordinance. The updated *General Plan* should contain language that conforms to provisions of the Quimby ordinance based on definite principles and standards that include:

- an established park land per capita ratio
- a formula for determining the amount of an in-lieu fee to be paid when dedication of land is not made (e.g., the David M. Griffith Associates, Ltd. formula of \$22.71/Capita)
- circumstances under which payment of a fee in-lieu of dedication of land will be accepted
- the minimum size of park that will be maintained

As noted, the ratio of five acres per 1,000 persons, the maximum allowed under State law, is included in the Subdivision Ordinance. When considering the amount of the fee to be paid in-lieu of dedication, the fee should be based on the cost per acre to purchase land in accordance with the established land/per capita ratio. If land is dedicated for park and recreational purposes as part of the Subdivision Map Act, the land would typically be zoned for residential use. It would, therefore, be equitable to assess a fee based on the average cost per acre of land zoned and assessed for single family residential



use. It may be necessary to revise the fee formula recently adopted by the Board of Supervisors, following the *General Plan* update.

Section 66477(g) of State law provides that payment of fees alone may be required in single family subdivisions containing 50 parcels or less. The word "may" indicates that this standard is a permissive one and not mandatory. The County should establish a threshold below which only fees will be assessed and dedication of land will not be required. For example, based on the per capita ratio of five acres per 1,000 persons, a 50 lot subdivision would require 0.7 acres of park land; a 72 lot subdivision would require one acre of park land; and a 357 lot subdivision would require five acres of park land. One factor to take into consideration in establishing this threshold would be the minimum size of park sites the County wishes to develop and maintain. If a 50 lot threshold is established, the County could end up with numerous small parks with little or no recreational development potential. A five-acre park site could be developed as a neighborhood playground. If five acres is established as the minimum that the County will develop and maintain, only subdivisions of 357 lots or more would be required to dedicate land; divisions of 356 lots or less would pay an in-lieu fee equivalent to the proportionate acreage requirement.

The Quimby Act ordinance adopted by Yuba County (Section 11.15.661 of the *Yuba County Subdivision Ordinance*) incorporates a 50 parcel threshold. Below the 50 parcel threshold, only fees must be paid, although the subdivider may voluntarily dedicate park lands in combination with fees to meet requirements for providing public parks and recreation facilities. In a subdivision with less than 50 parcels, but more than 50 dwelling units, land dedication may be required by the County, alone or in combination with fee requirements. The County's ordinance includes a fee formula based on the average number of persons projected in the subdivision per dwelling unit, the number of dwelling units, the general standard of five acres of parkland per 1,000 persons within the subdivision, the fair market value per dwelling unit in the subdivision (based on an appraisal report), plus another 20 percent of this amount for off-site improvements if on-site lands are not dedicated. Above the 50 parcel threshold, land for parks and recreation must be dedicated or fees must be paid in lieu of such dedication or a combination of land dedication and fees may be used to meet the general standard of five acres of parkland per 1,000 persons.



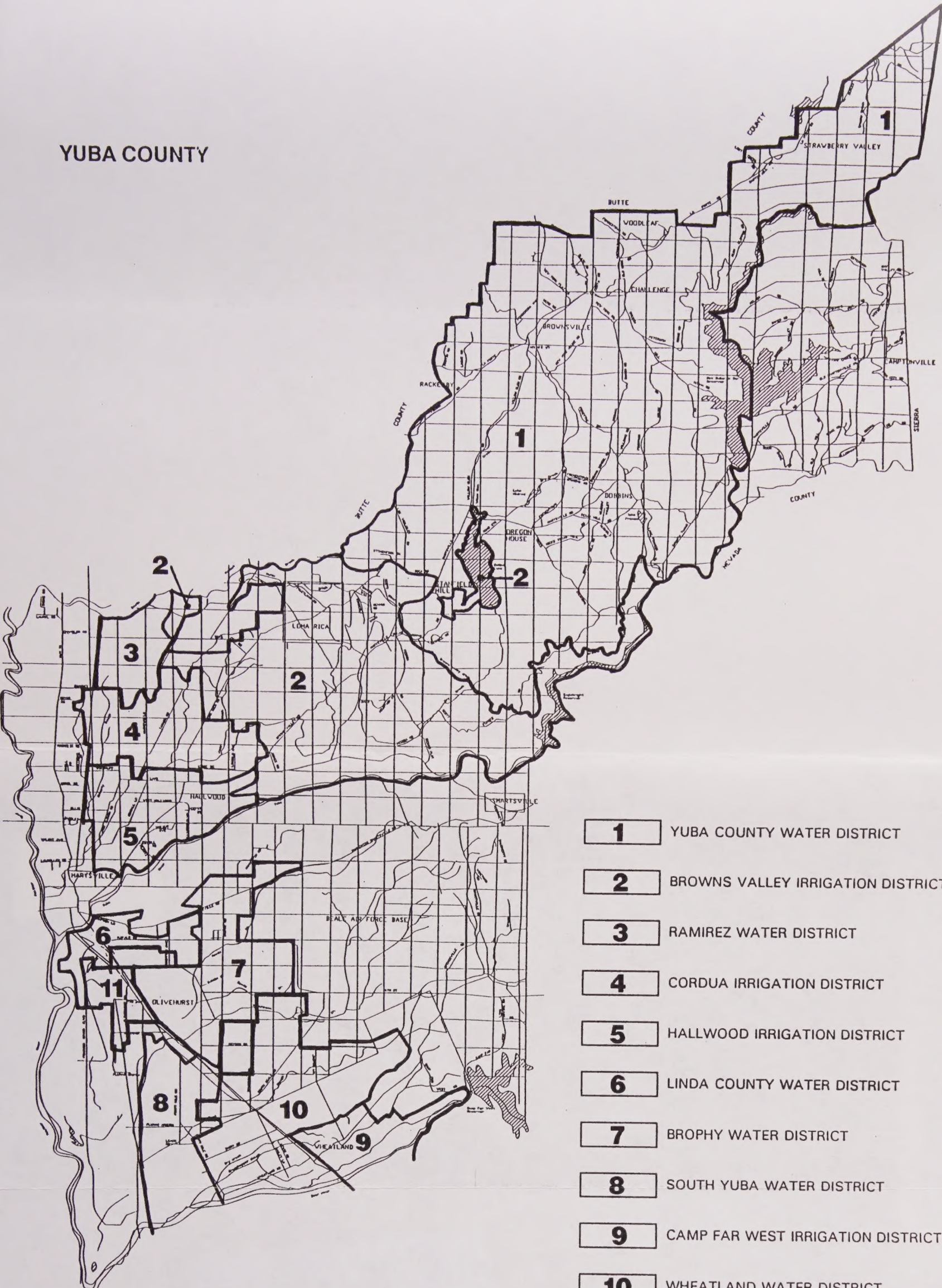
13.6 WATER SUPPLY

13.6.1 Water Suppliers

The following districts provide domestic, commercial, and/or irrigation water in Yuba County: Brophy Water District, Browns Valley Irrigation District, Camp Far West Irrigation District, Cordua Irrigation District, Linda County Water District, Ramirez Water District, South Yuba Water District, Nevada Irrigation District, Wheatland Water District, Yuba County Water Agency, Yuba County Water District, Hallwood Irrigation District, South Sutter Water District and Olivehurst Public Utility District (Figure 13-2). Additionally, some private companies, including Cathedral Oaks Water Company, and public utility corporations regulated by the California Public Utilities Commission (PUC), supply water to portions of the county (County of Yuba 1992:31-32).

The California Water Service Company (CWSC) has provided domestic water service to the City of Marysville since 1930. The company is an investor-owned utility that supplies water service through 21 separate systems to a population of 1.4 million in 38 California communities. In Marysville, the company operates 13 wells with a total capacity of 9,990 gallons per minute to provide water to the City from ground water sources. The wells range from eight inches to 16 inches diameter and 92 feet to 293 feet deep. As of 1989, the CWSC served 3,800 customers in the Marysville district. Of the water sold by CWSC in Marysville in 1989, 64.7 percent was to residences, 2.5 percent to industrial users, 16.8 percent to commercial customers, 4.6 percent to government, and an estimated 8 percent was unaccountable. About 28 percent of these services are metered. Four of the wells are operated in the winter and eight to nine in the summer. Two of the wells have detectable but permissible levels of iron and manganese and are normally not operated. Wells in nearby Yuba City and Olivehurst have significant iron and manganese problems. Two of the wells have auxiliary generators and two others have auxiliary electric power sources. With the exception of the older portions in the central City area, the water distribution system is reported to be in good condition. Current system storage in an elevated tank is 250,000 gallons. Line pressures range from 40 pounds per square inch (psi) to 75 psi. Fire flows consistently exceed 2,000 gallons per minute (gpm) and are generally in the 2,500 to 3,000 gpm range. The CWSC is required by law to provide fire flows specified by the local fire protection agency, which usually

YUBA COUNTY



- 1** YUBA COUNTY WATER DISTRICT
- 2** BROWNS VALLEY IRRIGATION DISTRICT
- 3** RAMIREZ WATER DISTRICT
- 4** CORDUA IRRIGATION DISTRICT
- 5** HALLWOOD IRRIGATION DISTRICT
- 6** LINDA COUNTY WATER DISTRICT
- 7** BROPHY WATER DISTRICT
- 8** SOUTH YUBA WATER DISTRICT
- 9** CAMP FAR WEST IRRIGATION DISTRICT
- 10** WHEATLAND WATER DISTRICT
- 11** OLIVEHURST PUBLIC UTILITY DISTRICT



SOURCE: Yuba County Water Agency, July 1989.



provides more than sufficient flow for domestic service. New lines in subdivisions are normally eight inches diameter with six inch diameter stub lines in cul-de-sacs. Regulated by the California Public Utilities Commission (PUC), California Water Service Company finances and designs its facilities according to PUC Rules 15 and 103. Rules promulgated under General Order No. 103 establish peak fire flow requirements. The CWSC sold \$5.2 million in surplus Yuba County water in 1989, a trend the Company expects to continue due to storage capabilities along the Yuba River (CWSC 1990; QUAD Consultants, May 1992:38).

Yuba County Water Agency provides wholesale irrigation water to other districts. The Agency does not sell domestic water. The Agency holds water rights on the North and Middle Forks Yuba River; it has no rights on the South Fork. Most of the water is taken from New Bullards Bar Reservoir. There is a highly variable demand, with peak demand typically in July and August depending on annual conditions. During July, total deliveries amounted to about 797 cubic feet per second (cfs). The Agency maintains some riparian rights, but amounts are considered minimal. Most of the distribution system is gravity fed, although there is a pumping station in northern Yuba County for the Ramirez Water District and in the southern portion of the Agency's service area near Wheatland. Future plans include possibly three lifts in the Wheatland area. The Highway 65 Canal has the potential to serve the Wheatland area, but topography prevents gravity feed. Water quality has been good. Water is tested semi-annually near Beale Air Force Base. No testing is undertaken in northern Yuba County. The City of Wheatland was recently granted money from the Agency to improve its existing pipelines. There has been discussions of Olivehurst and Linda forming a water district to receive surface waters because of periodic well problems in their water supply systems (i.e., iron and manganese, among other problems). The City of Marysville also holds water rights, and could receive water from the Agency if they installed an adequate pumping capacity (Nancy Jones, Yuba County Water Agency, pers. comm., September 1992).

Yuba County Water District serves about one-third of the county from Strawberry Valley nearly to Loma Rica. A small portion of Butte County is also served by the District. The service area population is estimated at about 3,500 people. The District provides both domestic and irrigation water and sells any surplus to areas outside the service area when available. Peak capacity for domestic supply is 2 mgd, and the maximum peak-day



consumption has been 0.77 mgd. Total domestic water delivered in 1991 was 90 million gallons. Total irrigation water delivered in 1991 was 1,080 acre feet. The District draws its supply from surface sources; no ground water is pumped. Two pumping facilities are used to deliver domestic water. A treatment plant was completed in 1986. All irrigation water is conveyed by gravity flow. Domestic water quality is considered excellent; all standards are met. Irrigation water is not potable, and customers are so informed. When a small treatment pond is in use at the treatment facility, there have been some complaints of musty or fishy taste or chlorine taste. Other treatment includes caustic soda, aluminum sulfate, and liquid alum. About one and one-half years ago, a carbon filtration system was put on line to remove taste and odor problems. Plans are being developed to provide more storage capacity for the domestic distribution system. Yuba County Water Agency provided a loan to the District for an irrigation ditch (Dobbins/Oregon Hill Canal) project to reduce leaks in the canal with gunite. The canal capacity is somewhat limited, but water allocations for irrigation water are the main problem. A moratorium has existed on expansion of the irrigation system since 1987-88, and no new customers have been added since then (Christie Galon, Office Supervisor, Yuba County Water District, pers. comm., September 1992).

The Linda County Water District serves about 12,000 people in the Linda area, delivering an average of about 2 mgd. The current water system can provide a peak supply of 10 mgd and 8,420 gpm. Water is derived from a system of seven wells and lightly chlorinated at the well sites. Residential and commercial users receive the water via six and eight inch diameter main lines interconnected through a looped water line system. The system has no storage facilities, but by utilizing the series of wells, the District is able to avoid large cross-town transmission lines and their associated maintenance and operation costs. There are two 12 inch main lines and one 8 inch main line located along Dantoni Road north of North Beale Road. The District has recently purchased a 10 acre well site near Dantoni Road to increase its capacity to meet anticipated growth. The District is also working toward improvement of water quality. Although most homes in Linda receive water from this system, some residents have their own wells, especially along Griffith Avenue. The Castlewood Mobile Home Park, Lago Road housing tract, and Yuba College also have their own wells (Yuba County Planning and Building Services Department 1989:8, 31).



The Olivehurst Public Utility District (OPUD) water system currently consists of 10 wells, three with emergency electrical generators and no storage facilities. These facilities are located primarily west of the Southern Pacific Railroad tracks. Peak capacity is 14 mgd with a current consumption average of 2.2 mgd and peak daily consumption of 6.5 mgd. The District's wells have high iron content, manganese, hydrogen sulfide, and methane gas, which require treatment (Gary Plasterer, General Manager, OPUD, pers. comm., August 1992). The Yuba County Water Agency recently approved a grant to OPUD, which when combined with other funds available to OPUD, will provide for construction of a new water treatment facility at the Yuba County Airport. This plant, expected to be on line near the end of 1993, will enable OPUD to meet state and federal drinking water standards for iron and manganese.

City of Wheatland operates a water system within City limits that serves about 1,800 people and a few commercial users. The daily average consumption is estimated at between 250,000 to 280,000 gallons (Michael Uralowich, Public Works Director, City of Wheatland, pers. comm., February 1994). Water is pumped from wells to a tower with 80,000 gallons capacity. Water is distributed from the tower to the entire community by gravity feed. Water quality is considered excellent and there is no treatment. The feasibility of surface water sources and treatment facilities are being considered. The City is engaged in joint planning with the Yuba County Water Agency to provide for future growth. The Yuba County Water Agency has reserved a 1,500 acre-feet per year allotment for the City of Wheatland's domestic water supply, but up to now, demand has not warranted using this allotment (Dennis Ryan, Consulting City Engineer, City of Wheatland, pers. comm., September 1992; Monika Wall, City Administrator, City of Wheatland, pers. comm., September 1992). Additional information regarding the City of Wheatland water system, peak fire flow capabilities, and expansion plans is in Section 9.0, Public Safety of this document.

Nevada Irrigation District provides domestic water supply to 41 customers in Smartville. In December 1993, the District directors agreed to spend \$200,000 to upgrade the treatment plant that serves Smartville to meet State regulatory requirements by February 1995. The plant will be upgraded with used tanks and filters from other treatment plants to replace the outdated filtration system at Smartville. Smartville is outside the boundaries of Nevada Irrigation District, which provides very little water within Yuba County and



is, therefore, not shown on Figure 13-2. The District is required to provide service to Smartville under the Railroad Commission Act of the early 1900s (Marysville-Yuba City *Appeal-Democrat*, December 10, 1993).

Cathedral Oaks Water Company is a small, family-owned and operated water system serving the Oak Ridge and Cathedral Oaks subdivisions. It presently serves 65 households in the subdivisions as well as a church and an additional residence outside the subdivision. Current facility capacity can accommodate an additional 115-120 services. Strictly a domestic water supply system, the Company buys irrigation water from the Browns Valley Irrigation District and treats it with chlorine. The water is derived from Merle Collins Reservoir. Cathedral Oaks Water Company currently buys six miner's inches¹ (97,200 gallons per day) but is entitled to 40 miner's inches (648,000 gallons per day). The system uses both gravity feed and pumping to distribute water. A redwood storage tank of 40,000 gallons is used along with a hydropneumatic tank of 5,000 gallons. Current average daily winter consumption is 2,352 cubic feet (17,593 gallons); average daily summer consumption is 10,362 cubic feet (77,508 gallons). Water quality is currently excellent, although in the past there have been turbidity problems. The system was first constructed in 1966 and is well-maintained. There are no current improvement or expansion plans. Expansion would be considered if additional lots were sold in the service area (Lou Ella McGill, Co-owner, Cathedral Oaks Water Company, pers. comm., September 1992). Based on the fact that the current system accommodates 67 services with a flow of six miner's inches while maintaining surplus capacity, the permitted allotment of 40 miner's inches should be able to accommodate a minimum of 447 services, assuming that the treatment and distribution systems can be expanded accordingly.

Browns Valley Irrigation District serves a 50,000 acre area from Englebright Dam westward to the Browns Valley and Loma Rica areas and north to the Butte County line. All water delivered by BVID is non-potable for agricultural irrigation. It is drawn primarily from Merle Collins Reservoir; some comes from the Yuba River. The District has water rights to 57,000 acre feet and diversion rights of 47 cfs from the Yuba River. Most of the system is gravity fed, except for the pumping station on Pump Line Canal.

¹ In 1905, the miner's inch was standardized to one and one-half cubic foot per minute or 11.25 gallons per minute (Meisenbach 1989:3).



The District operates a power station below Merle Collins Reservoir that generates power for diversions and pipelines. Water quality is excellent without treatment, and the water is said to meet standards of the California Inland Surface Waters Plan. Recently completed improvements were made for water conservation. Two projects involved 61,000 feet of new large diameter pipe. A new project will provide 10,000 feet of large diameter pipe (Bob Winchester, Engineer and General Manager, Browns Valley Irrigation District, pers. comm., September 1992).

Brophy Water District provides irrigation water only. The service area of about 12,000 to 13,000 acres is presently being expanded to about 16,000 acres as a result of annexations. Their water allotments have increased proportionally. The area covered is in the southern portion of the county from the Yuba Gold Fields along the Yuba River southward to Erle Road and west to about Griffith Avenue. This District skirts Beale Air Force Base. Peak capacity is 60,000 acre feet, which is the District's total allotment. Generally, the entire allotment is used. The water is purchased from Yuba County Water Agency, which draws it from the Yuba River. Most of the District is served by gravity feed, although they do have lift stations. The distribution system is good and water quality also is good. Much of the water is used for rice irrigation (William A. Baggett, Secretary, Brophy Water District, pers. comm., September 1992).

Camp Far West Irrigation District provides irrigation water only to an area estimated at 5,000 acres, 4,800 of which are irrigated. The District contracts with South Sutter Water District for 13,000 acre feet of water from the Bear River. No plans exist to expand this District or the scope of services it provides (John Eachus, Director, Camp Far West Irrigation District, pers. comm., September 1992).

Hallwood Irrigation District provides irrigation water in the District 10-Hallwood area. The Company is entitled to 78,000 acre feet of Yuba River water, which it receives under agreement to Yuba County Water Agency. The water is distributed by gravity feed and has excellent quality. Residents within the District provide their own domestic water from wells (Nancy Jones, Yuba County Water Agency, pers. comm., September 1992; Sam Shintaffer, Board Member, Hallwood Irrigation District, pers. comm., September 1992).



South Yuba Water District provides irrigation water only to a 10,600 acre area. The District is entitled to 42,000 acre feet of Yuba River water, which is purchased from Yuba County Water Agency. The water is delivered via gravity feed and pumps. Work is currently near completion on the distribution system, which when completed, will eliminate the need for pumping (Frances Hofman, Secretary, South Yuba Water District, pers. comm., September 1992; Paul Minasian, Attorney, South Yuba Water District, pers. comm., September 1992).

Ramirez Water District distributes irrigation water and has an entitlement of 11,900 acre feet of Yuba River water. The distribution system is a combination of gravity feed and pumping systems. The District has no current needs or plans to expand (Sam Shannon, ex-Director, Board of Trustees, Ramirez Water District, pers. comm., September 1992).

Cordua Irrigation District provides strictly irrigation water from about mid-April to the beginning of January. The District covers about 10,000 acres and has rights to 275 cfs from the Yuba River by direct gravity feed. They have no future expansion plans (Charles Mathews, Chairman of the Board, Cordua Irrigation District, pers. comm., September 1992).

Wheatland Water District was founded in the early 1950s for the purpose of delivering irrigation water to south Yuba County. To the present time no water has been delivered. The District is approximately 8,000 acres in size and extends into Placer and Sutter counties (Marilyn Waltz, Secretary Treasurer, Wheatland Water District, pers. comm., October 1992).

South Sutter Water District has jurisdiction over the Camp Far West Reservoir and portions of the Bear River in Yuba County. However, the District's service area boundaries lie entirely outside Yuba County (Robert Melton, Sutter County Water District, pers. comm., November 1992). Therefore, the District's boundaries do not appear on Figure 13-2.

Plumas Mutual Water Company provides irrigation water to an area of about 2,500 acres. The company is allowed 14,000 acre-feet annually of Feather River water but have been cut back to about 10,000 acre-feet based on use. Plumas Mutual also has a deep well with a 75 horsepower pump, and some users in the service area have individual wells. Two 100 horsepower pumps are used to draw water from the feather River. There are no current



expansion plans, but some farmers in the service area may be selling land to subdividers and thus relinquishing their water rights. Plumas Mutual is concerned and has been advised to attempt to purchase these water rights in order to maintain options on their full current allotment (Steve Danna, Plumas Mutual Water Company, pers. comm. October 1992).

The California Department of Health Services, Office of Drinking Water in Redding oversees water quality for domestic water providers that have 200 or more service connections. In Yuba County, DHS regulates six such providers, including Linda County Water district, California Water Service company, OPUD, City of Wheatland, Yuba County Water District, and Beale Air Force Base (Richard Hinrichs, Associate Sanitary Engineer, California Department of Health Services, Office of Drinking Water, Redding, pers. comm., October 1992).

In addition to these major suppliers of public water, there are a number of smaller domestic water providers in Yuba County. The Yuba County Health Department, Environmental Health Division monitors bacteria counts in the water provided by these small community water systems (Suzanne Hannan, Registered Environmental Health Specialist, Yuba County Health Department, Environmental Health Division, pers. comm., October 1992). Table 13-2 identifies community water systems regulated by the County; they are listed by community and divided among systems that utilize ground water and surface water.

13.6.2 Water Distribution System Planning

At the state level, the California Public Utilities Commission (PUC) has issued General Order 103, entitled "Rules Governing Water Service Including Minimum Standards for Design and Construction." This guidance document was initially adopted in 1956 and has been updated and amended periodically, the last time being in 1983. Included in this General Order are standards for water service, water quality, design and construction of distribution systems, disinfection, measurement of service, rates and billing, and fire protection standards of water systems (PUC 1983).

Water supply and distribution systems are not under County control. Coordinating with these individual districts and companies is vital to the planning process. Each agency should be consulted during the development



TABLE 13-2
YUBA COUNTY - PUBLIC WATER SYSTEMS
BACTERIOLOGICAL MONITORING

COMMUNITY WATER SYSTEMS - GROUNDWATER	
Brownsville	Aero Pines
Camptonville	North Yuba Ranger Station
	Rebel Ridge Mobile Home Park
Clipper Mills	Feather River Manor
	Forest View Trailer Park
Linda	Casa Mia Mobile Home Park
	Castlewood Mobile Home Park
	Christopher Sims Rental (Griffith Ave.)
	Christopher Sims Rental (Feather River, Blvd.)
	Countryside Mobile Home Park
	Naumes-Dantoni Orchard Well #9
	Naumes - New England Orchard Well #7
	Nichols Point Mobile Home Park
	Oak Ridge Apartments
Marysville	Acres View Mobile Home Park
	Country Village Mobile Home Park
	Hollywood Trailer Park
	Yuba College cafe, kitchen sink



COMMUNITY WATER SYSTEMS - GROUNDWATER	
Olivehurst	George Avenue Apartments
Oregon House	Country Air Mobile Home Park
	Ponderosa Mobile Home Park
	Renaissance Vineyard and Winery (lodge)
	Whispering Pines Mobile Home Park
	Yuba Mobile Home Park
Plumas-Arboga	Fairway Downs Mutual Water System
Smartville	River Highlands Community Services District
COMMUNITY WATER SYSTEM - SURFACE WATER	
Camptonville	Camptonville C.S. D.
Loma Rica	Cathedral Oaks Water Company
Wheatland	Camp Far West Resort

Source: Yuba County Health Department, Environmental Health Division, 1992.

application/permit review process to evaluate the impacts of development on the existing system and to facilitate extension/expansion design.

State law requires special districts and other public agencies proposing to undertake capital improvements to submit a list of projects to the local planning agency for a finding of General Plan consistency prior to undertaking any construction (Government Code Section 65401). The County should assure that special districts are complying with this requirement in order to facilitate General Plan implementation.

In newly developing areas, the County may choose to establish systems under the auspices of a County Service Area. This will provide greater control over the planning and development of such systems and permit closer coordination



between infrastructure availability and development opportunities. Where existing special districts are unable to meet the demands of new regulations and growth, the County may wish to consider taking over such operations. Water facilities can be operated without posing a burden to County taxpayers as long as a realistic rate structure is adopted.

The *Yuba County Subdivision Ordinance* (Chapter 11.15, Section 400) provides that a subdivider must provide public water facilities if such facilities are available to that subdivision. Section 681 provides standards and requirements for public water systems in the county.

13.6.2.1 Development Densities and Land Use Designations Requiring Community Water Systems

The *Yuba County Zoning Ordinance* specifies when a public or community water system is required as a condition of subdividing land. A water system is required when the following conditions exist:

- All parcels of less than one acre within Agricultural/Rural Residential ("A/RR") zones shall be connected to a community water system.
- Within foothill communities and community core areas, all parcels of less than one acre in the Challenge Core Area shall be connected to a community water system. In the other foothill communities and community core areas, all parcels of less than five acres shall be connected to a piped water system or sample test wells or existing well records indicate reasonable assurance of adequate water. The only exceptions are the Strawberry Valley Non-Core Area, the Camptonville Non-Core Area, and the Challenge Non-Core Area. This rule applies in the Strawberry Valley Core Area, all areas of Rackerby, all areas of Brownsville, the Camptonville Core Area, and all areas of Smartville, Loma Rica/Browns Valley, and Dobbins/Oregon House.
- All parcels divided within Single-Family Residential Zones ("R-1"), Medium Density Residential Zones ("R-2"), and High Density Residential Zones ("R-3") shall be provided with



domestic water, sanitary sewer, and storm water drainage systems.

- All developments within Rural Commercial Zones ("RC") shall be provided with domestic water, waste water disposal, and storm water drainage systems. Minimum lot size in such zones is 6,000 square feet if connected to a public or private sewer system or 20,000 square feet if not connected to a public or private sewer system.
- In a General Commercial Zone ("C"), minimum lot size is 6,000 square feet, and all parcels shall be provided with domestic water, sanitary sewer, and storm water drainage systems.
- All new development within the Specific Plan—East Linda ("SP-1") Zone shall be connected to domestic water, sanitary sewer, and storm water drainage facilities, regardless of lot size or use.
- All mobilehome sites in Planned Mobilehome Parks must be served with water.

Another aspect to consider in identification of development densities in relation to community water systems is the requirement for adequate fire flow. This subject is discussed in Section 9.2.1.4.

13.7 WASTEWATER DISPOSAL

13.7.1 Existing Sewer Service and Treatment Facilities

Aside from the cities of Marysville and Wheatland and the communities of Linda and Olivehurst, virtually all sewage disposal in Yuba County is accomplished by means of on-site septic tank and leach field systems. In particular, septic tanks are used throughout the rural foothill and mountain communities. Many current proposals for planned community developments, specific plan areas, and large subdivisions in the county envision development of wastewater collection and treatment facilities.



Marysville is served by a City-owned wastewater treatment system that was first constructed in 1949. Presently, the system serves over 3,700 residential and commercial customers. Wastewater is pumped to the treatment facility by three primary pumping stations and two smaller pumping stations located throughout the City. The facility provides secondary treatment. Pretreatment is accomplished by screening, comminution and grit removal followed by primary clarification, biofiltration by means of a trickling filter, secondary clarification, and anaerobic sludge treatment. Treated effluent is discharged to percolation ponds on the Feather River floodplain. The plant is permitted to operate by the Central Valley Regional Water Quality Control Board (CVRWQCB). Current average dry weather flow is 1.4 mgd. Peak wet weather flows reach up to 5.2 mgd. Processes in the plant have individual capacities of 1.7 to 3.5 mgd. There is currently adequate pond storage capacity to contain all dry weather discharges into the percolation ponds. The wastewater collection systems and lift stations were built in stages as the City has grown. The City currently operates and maintains about 38 miles of sewer line and three primary lift stations. Wastewater is conveyed to the treatment plant by a combination of gravity-feed sewers and pumped force mains. The percolation ponds have a total surface area of about 70 acres. Ponds were originally constructed south of the treatment plant at a point of land north of the Yuba and Feather rivers confluence. Additional ponds were built on the west side of the Feather River in 1989. The percolation ponds receive the treated effluent and allow it to seep into underlying soil. The ponds have underlying clay deposits that have minimum permeability and reduce percolation. Limited industrial discharges are accepted by the treatment plant from Yuba Sutter Disposal, Inc., car washes, hospitals, medical clinics, auto repair and painting shops, and plating shops.

The Olivehurst Public Utilities District (OPUD) provides sewer service to the Olivehurst area. OPUD operates a wastewater treatment plant in the south Olivehurst area. Plant capacity was recently expanded to 1.8 mgd under Phase I of a planned capacity expansion program. Current average daily flow is 1.1 mgd, thus there is some surplus capacity (Gary Plasterer, General Manager, OPUD, pers. comm., August 1992).

Sewer service for the Linda area is provided by the Linda County Water District, which operates a wastewater treatment plant on the east side of the Feather River about one mile south of Linda. The plant does not serve all residents of the District. Current plant design capacity is 1.5 mgd, average dry



weather flow, adequate to serve about 12,000 people. Current peak wet weather flows are about 4.0 mgd. Average daily flows are about 1.1 to 1.2 mgd, and there is a "surplus" capacity of 0.3 to 0.4 mgd. However, most of this excess capacity is already committed to proposed residential developments in the service area. The treatment facility, constructed in 1960, is considered to be well designed. It utilizes a secondary biofiltration system with evaporation ponds and percolation settling ponds. The discharge and holding ponds are on the Feather River flood plain. The District has permission of the CVRWQCB to discharge treated water into the Feather River from November to May, but has not done so for the past 10 years due to the adequate pond capacity. The District's collection system consists of six inch through 17 inch diameter gravity feed sewer lines and seven lift stations. The present sewer trunk line extends from the treatment plant up to Erle Road, through the Country Club Park tract to North Beale Road, and then east to a point about one-half mile east of Griffith Avenue. Those households not presently connected to the sanitary sewer system are served by individual septic tank and leach field systems (QUAD Consultants, August 1992:3-109; Yuba County Planning and Building Services Department 1989:33-34).

The City of Wheatland operates a wastewater treatment facility that serves the City. Most of the properties served are residential; a few are commercial. Average dry weather flow is 0.2 mgd; average wet weather flow is 0.35 to 0.45 mgd. Facility capacity was upgraded from 0.184 mgd to 0.587 mgd in 1991 (Don Mullens, Public Works Department, City of Wheatland, pers. comm., September 1992). The treatment facility, which was constructed in 1969, lies outside the Bear River levee system. Percolation ponds lie between the levees, and it is uncertain whether they are above or below the 100 year flood plain. The treatment facility provides primary and secondary treatment through extended aeration and use of clarifiers, among other facilities, including a headworks and aerators. Effluent is discharged to percolation ponds by gravity flow. Inflow to the plant arrives via 8 inch diameter pressurized main lines. There are four lift stations; three serve various portions of the City, while the fourth pumps everything through Malone Station (Dennis Ryan, Consulting City Engineer, City of Wheatland, pers. comm., September 1992; Monika Wall, City Administrator, City of Wheatland, pers. comm., September 1992).



13.7.2 Treatment Facility Planning

The siting of new wastewater treatment facilities should be undertaken as a coordinated effort between the County, cities and special districts. If these facilities are not adequately planned, the potential for land use conflicts is more likely to result. Establishing policies through the *General Plan* process will not only assist in the siting of new facilities, but also can encourage concentric growth and infill development by directing new development to areas that can be served by current facilities. The potential for new facilities will depend on County growth location policies, the demand created, and funding for construction.

The City of Marysville commissioned a *Wastewater Master Plan*, a draft of which was submitted by Kennedy/Jenks/Chilton (1991), to plan for capacity needs and improvements through the year 2010. According to this Plan, there is a shortage of percolation capacity for current treatment plant flows. Dry weather flows are handled adequately, but wet weather flows, which are typically much greater, require additional percolation capacity. The treatment plant itself can adequately treat all existing flows. However, additional discharge capacity is needed to discharge treated effluent to land away from the treatment plant (either land to be acquired by the City or land on which a permanent discharge arrangement can be made). The *Master Plan* considers two options to increase treatment capacity to meet growing demands: construct a new plant or expand the existing plant.

OPUD is currently undergoing planned expansion of its wastewater treatment facility. Although current daily average flow is about 1.1 mgd, pending development projects will quickly exhaust all surplus treatment capacity. For example, the proposed Wheeler Ranch project within the *Plumas Lake Specific Plan Area* will by itself generate an estimated 1.11 mgd average daily flow at buildout. A three-phase expansion program has been planned. Phase I, recently completed, added about 0.5 mgd capacity and was funded by an Economic Development Administration (EDA) grant and local funds. Phase II would provide sludge handling facilities, and Phase III would add an additional 0.8 mgd capacity. Phases II and III will be funded primarily through developer fees (WPM Planning Team, Inc. 1992:10-1).

A *Wastewater Treatment Master Plan* was prepared for the Linda County Water District in 1986 to guide wastewater facilities planning for the period



1987-2005. A 1990-91 update of the District's *Water and Wastewater Treatment Plan* prepared by Kennedy-Jenks indicated that the District's planned improvements could accommodate the 6,014 dwelling units that will occupy the *East Linda Specific Plan* area plus an additional 400 residential units (Rick Helman, Senior Planner, Yuba County Planning and Building Services Department, pers. comm., October 1992). Along with new facilities, a new CVRWQCB discharge permit will be required. In addition to developer fees to fund expansion and improvements for this and other projects, the *East Linda Specific Plan* EIR proposed formation of a community facilities district to help finance the facilities. The proposed *Stonebridge Specific Plan Area*, which is south of the *East Linda Specific Plan Area*, will also impact existing wastewater treatment facilities. Included in this proposed project will be an on-site wastewater collection and treatment system that is proposed to be annexed into OPUD. It is proposed that funding will derive from fees and assessments on property owners within the Specific Plan Area (QUAD Consultants, August 1992:3-109 - 3-110; Yuba County Planning and Building Services Department 1989:33-34).

Wheatland anticipates future annexations of lands within its Sphere of Influence. A Specific Plan for undeveloped portions of the City addressed expansion of the treatment facility to accommodate 5,800 people. Also, CH2M Hill prepared a *City of Wheatland Wastewater Master Plan* in December 1988. Recent expansion of the wastewater treatment facility was undertaken pursuant to the *Master Plan* to accommodate this projected growth (Dennis Ryan, Consulting City Engineer, City of Wheatland, pers. comm., September 1992). The *Wastewater Master Plan* concluded that all projected growth could be accommodated through a two-phase expansion of the existing system as opposed to construction of a second system. When expansion is fully implemented (i.e., the first phase has been completed, as alluded to above), the system will have a standby aerator (to provide redundancy, so that the primary aerator can be taken off-line for maintenance), additional clarifier capacity (again, to provide for system redundancy), pumping and piping improvements, expanded sludge drying beds, a flow splitting weir, and other related improvements. Sewer mains and lift stations will also require improvements or expansion. Major portions of the funding for these improvements will come from new developments in Wheatland, primarily in the northern half of the City (City of Wheatland 1990).



In response to the 1991 California Inland Surface Waters Plan adopted by the Water Resources Control Board and other regulatory guidelines, existing wastewater treatment facilities that discharge treated effluent to streams will be required to meet stricter treatment standards as they renew their discharge permits with the RWQCB. Standards will be set by the RWQCB on a case-by-case basis.

13.7.3 Septic Systems and Limitations

Aside from Marysville, Olivehurst, Linda, and Wheatland, which all have sewage treatment facilities and sanitary sewer systems, the remainder of Yuba County relies on individual on-site septic tank and leach field systems. In 1990, the Yuba County Environmental Health Department, which regulates on-site septic systems in Yuba County, issued 306 permits for on-site sewage disposal. In 1991, there were 257 permits, and as of September 1992, 134 permits had been issued (Tej Maan, Senior Environmental Health Specialist, Yuba County Environmental Health Department, pers. comm., September 1992; John Wright, Director, Yuba County Department of Public Works, pers. comm., September 1992).

Limitations on the use of individual septic systems include unsuitably low soil permeability, overly rapid percolation rates, steep topography, and shallow depth to groundwater or bedrock. Septic tanks operate well in the parts of the county where the soil drains well and is gravelly. Soils characterized by rapid percolation provide inadequate treatment for the sewage before it reaches the groundwater. Septic tanks in the foothills are often difficult to install, primarily due to the limited amount of soil covering rock. Installation of individual disposal systems in areas containing soils with specific limitations typically have to be specially designed or engineered to accommodate or compensate for those limitations.

The County presently accepts Standard, Engineered and Advanced-Design leach-trench on-site wastewater systems. Standard systems are allowed in areas that have a percolation rate from 5 to 60 minutes per inch. Engineered systems are approved on sites with percolation rates from 61 to 120 minutes per inch. Advanced system design is required for all other cases. On-site septic systems could exist on parcels from 0.5 to 1 acre if suitable soil conditions are present. Lots served by individual water wells need to be larger, however, to provide adequate separation between on-site septic systems



and wells. With suitable soil conditions, lots with both wells and septic systems need to be 3 to 5 acres.

Other factors besides lot size and soil conditions must be considered, however. The cumulative effect on ground water from a large concentration of septic systems within a drainage basin must also be considered. Because a majority of houses in some of the rural portions of the county were constructed more than 20 to 30 years ago, septic systems associated with these houses can be expected to have a high failure rate unless mitigation measures are implemented. Section 4.2.1.4 of this document provides additional detail regarding constraints on on-site septic systems and potential impacts to ground water in various parts of the county.

A privately-commissioned study was completed in 1991 of the chronic failure of on-site wastewater disposal systems (i.e., septic tanks/leach fields) in the Brownsville area. The study area included 200 developed parcels out of a total of 260 parcels, mostly consisting of single family residences and trailer parks. The study concluded that a potential health hazard exists throughout the community from exposure to human fecal bacteria originating in failed on-site wastewater disposal systems. These failing systems also were said to be contributing to bacterial contamination of surface waterways. The cause of failure was primarily attributed to the unsuitability of soil conditions for on-site treatment and disposal systems.

The study recommended public meetings to be held regarding the findings of the study; additional dye testing and coliform (i.e., fecal bacteria) testing to be conducted at different times of the year and during an average or above-average rainfall year; initiation of a well-testing program to determine whether groundwater resources have been affected; and preparation of a plan for correcting the problem by developing a community wastewater collection, treatment, and disposal system if indicated by further testing and monitoring results (Charpier, Martin & Associates, 1991).

This issue was discussed with Dennis Parker, General Manager, Yuba County Water District; Pat Gavigan, Director, Yuba County Environmental Health Department; and Cheryl Thomas, Director, Yuba County Housing and Community Services Department (pers. comm., May 1994). These officials referred to a Community Housing Improvement Program (CHIP) study. The CHIP study is considered to be somewhat inconclusive, because fecal bacteria



counts in Dry Creek are somewhat higher upstream of Brownsville than downstream; possibly, the study did not explicitly distinguish human fecal bacteria from animal fecal bacteria.

Yuba County Water District has offered to assume the lead in administering the construction and operation of a community wastewater treatment system, should conclusive engineering studies be completed that clearly demonstrate the need for a system, based on a finding that a human health risk from failed on-site sewage disposal system clearly exists. However, presently the issue of on-site disposal systems is not regarded as an immediate health risk, and no agency or individual has been identified as a funding source for the necessary studies to confirm the extent and urgency of the problem, if any, and recommend alternative solutions.

13.7.4 Development Densities Requiring Community Sewer Systems

The Yuba County Subdivision Ordinance (Chapter 11.15, Section 400) provides that a subdivision must provide public sewage facilities if such facilities are available to that subdivision. Section 682 provides standards and requirements for public sewage systems in the county.

The Zoning Ordinance of Yuba County states when a public or community sanitary sewer system shall be required as a condition of subdividing land. A sewer system is required when the following conditions exist:

- All parcels divided within Single-family Residential Zones ("R-1"), Medium Density Residential Zones ("R-2"), and High Density Residential Zones ("R-3") shall be provided with domestic water, sanitary sewer, and storm water drainage systems.
- All developments within Rural Commercial Zones ("RC") shall be provided with domestic water, waste water disposal, and storm water drainage systems. Minimum lot size in such zones is 6,000 square feet if connected to a public or private sewer system or 20,000 square feet if not connected to a public or private sewer system.
- In a General Commercial Zone ("C"), minimum lot size is 6,000 square feet, and all parcels shall be provided with domestic water, sanitary sewer, and storm water drainage systems.



- All new development within the Specific Plan–East Linda ("SP-1") Zone shall be connected to domestic water, sanitary sewer, and storm water drainage facilities, regardless of lot size or use.

13.8 UTILITIES

13.8.1 Electricity

The Pacific Gas and Electric Company (PG&E) is the primary service provider in Yuba County for natural gas and electricity. Some of the electric power is locally produced by the Colgate Power House and the Narrows Powerhouses I and II. Power also is generated by a biomass cogeneration plant near Olivehurst (see Section 17.3). Power from these various sources is either produced by PG&E or sold to PG&E to be tied into the PG&E power grid. PG&E has not provided requested information concerning existing and projected generating capacity in Yuba County.

13.8.2 Natural Gas

Natural gas is provided to urbanized areas of the county in the Sacramento Valley by PG&E. This service can be provided only where natural gas pipelines have been installed. The rural portions of the county, particularly in the foothills and mountains, do not have this service. Those rural residents who run gas appliances purchase bottled propane from several providers (see following section). PG&E has not provided requested information on the existing and projected natural gas service area in Yuba County.

13.8.3 Bottled Gas

The majority of Yuba County is not served by natural gas lines, and many county residents use bottled propane or butane to operate appliances. There are several providers who deliver bottled gas to residential users who have owned or leased tanks on their property. Many other providers sell bottled gas from fixed storage tanks to consumers who bring small, portable tanks to the providers' premises. Some of the providers who make home deliveries of bottled gas in Yuba County are listed below. This is not an exhaustive list. There are some very small operators within the county and some companies outside the county that appear to serve a very limited number of households.



Those companies listed below, however, service a majority of the Yuba County market for bottled propane.

WestPac Propane is located in Placer County, but serves most of Yuba County. WestPac was acquired by Northern Energy, Inc. about one year ago. The company has about 30,000 gallons of storage tank capacity for propane and butane. They operate several 1,800 gallon and 3,000 gallon delivery trucks and a 9,000 gallon tanker with which it fills its storage tanks. Presently, they visit Yuba County five days per month in summer and 10 days per month in winter to make residential deliveries. The company is exploring expansion possibilities in Yuba County (R. A. Gillam, General Manager, WestPac Propane, pers. comm., September 1992).

Herger Propane Gas of Rio Oso serves all of Yuba County, with most of its business being in the Marysville, Wheatland, and Loma Rica areas. They have a 14,500 gallon storage facility and operate three deliver trucks. During winter they make about 40-60 deliveries per week in Yuba County, less in summer. They have no current expansion plans, but their business in the Loma Rica area seems to be expanding (Lynn Davis, Receptionist/bookkeeper, Herger Propane Gas, pers. comm., September 1992).

AmeriGas sells propane to Yuba County residents in the Loma Rica/Browns Valley areas northward past the County line. They have the ability to operate southward in the county down to about Wheatland, but they no longer have any accounts in the Wheatland area. The company estimates that it serves about one-sixth of the bottled gas market in Yuba County. They make about 60-100 deliveries per week during winter and less in summer. AmeriGas maintains a 30,000 gallon storage tank in Yuba County. They have no future expansion plans for Yuba County (Dave Artero, District Manager, AmeriGas, pers. comm., September 1992).

Brown's Gas Company was established in 1945 and serves the entire county. They maintain two storage facilities in Yuba County, including a 12,000 gallon propane storage tank in Linda and a 27,000 gallon tank in Oregon House. They operate 1,880 gallon and 3,000 gallon delivery trucks, making about 60 deliveries per day in winter and somewhat less in summer. The company hopes to expand to meet future demand within and beyond Yuba County. They are currently experiencing competition from companies based outside the county. They estimate that they serve about 35 percent of the Yuba



County bottled gas market (Rick Brown, Manager, Brown's Gas Company, pers. comm., September 1992).

13.8.4 Telephone

Pacific Bell is the primary local calling provider for Yuba County. Pacific Bell also provides long distance access for a limited portion of the county; AT&T, Sprint, and MCI also provide long distance service in accordance with rules of the Federal Communications Commission. Pacific Bell has installed state-of-the-art telephone facilities in Yuba County that include digital transmission of voice and data communications.

Pacific Bell presently serves 22,046 residences, 4,051 businesses, and has 5,070 other lines in Yuba County for Pacific Bell internal communications, government and special services (such as the California Lottery). The company is confident that it has the capabilities to expand its facilities and service capacity to meet future County needs (David K. Watanabe, Sales Manager, Pacific Bell, pers. comm., September 1992).

13.8.5 Cellular Service

Cellular telephone service is provided in Yuba County by Air Touch and Cellular One. Calls are placed from cellular phones, which are simply wireless mobile or portable phones that have radio-frequency (RF) transmitters and receivers. The RF signals are received by "cell" sites (hence the name "cellular"), which are RF receiver/transmitter stations situated on towers that are strategically placed to be able to transmit over or around topographic barriers. Signals from cellular phones are transmitted from cell to cell until they reach a mobile telephone switching office (MTSO) in the local calling area that the caller wishes to reach. Here, the call is linked by the MTSO from the cellular network to the local telephone office.

From a planning viewpoint, the County must take care in approving cell sites. Planning considerations include flight patterns, visual/aesthetic effects, and possible effects to wildlife. As opposed to other utilities, however, there are no pipelines or cables, which can represent a greater spectrum of potential effects. Also, a specific band of radio frequencies is assigned to each provider. They can be reused to serve a large number of people, since the signals are not confined to cables to which individual users must be linked



(Cellular One marketing brochure). Unless a sufficient grid of towers is approved within a county, cellular phone coverage will be spotty or non-existent.

13.8.6 Cable Television

Continental Cablevision is the only cable provider currently serving Yuba County. The entire county is not wired for cable television. The communities of the county served include Marysville, Linda, Olivehurst, Beale AFB, Wheatland, and some of the surrounding areas. Continental receives its television signals via microwave from the telephone companies and re-transmits these signals to customers on coaxial cable. The company plans to expand this year into the Plumas-Arboga Road area. Future plans call for using fiber optic cable for main trunk lines. This cable will either be buried or on existing poles, depending on system availability (Rick Adams, Technical Supervisor, Continental Cablevision, pers. comm., September 1992).

13.9 YUBA COUNTY LIBRARY SYSTEM

The Yuba County Library has been operating since the early 1900s. It currently operates from its facility at 303 2nd Street, Marysville, which was built in 1977. The Yuba County Library is a member of the Mountain-Valley Library System, a cooperative that provides inter-library sharing. As of the end of 1988, the library had approximately 98,000 volumes, 140 periodical subscriptions with backfiles of five to ten years, records, tapes, films, and art (County of Yuba 1988:68).

There are presently no branch libraries, but the County operates a mobile "bookmobile" on Thursdays and Fridays. The bookmobile has a rotating schedule that brings it into Olivehurst, Linda, Wheatland, and the rural foothill communities, including Browns Valley and Loma Rica, every two weeks.

A site has been designated for a Yuba County branch library to be constructed in conjunction with implementation of the *East Linda Specific Plan*. The Plan envisions a population of about 15,000 at buildout, which along with the projected Linda population outside the Specific Plan Area, will result in a total Linda population of 27,000 persons within the community of Linda. The proposed library site is within the planned community park on Hammonton-Smartville Road. The structure would be a minimum of 14,850 square feet based on a standard of the State



Office of Library Development Services that the size of a community library should be a minimum of 0.55 square feet per capita (Wade Associates 1989:6-8).

Recent budget cuts have resulted in reduction of library staff hours to forestall layoffs. Saturday hours of operation were cut from 10:00-5:00 to 1:00-5:00 (Mary Robertson, Library Assistant II, Yuba County Library, pers. comm., September 1992).

13.10 PUBLIC BUILDINGS AND GROUNDS AND SPECIAL DISTRICTS

13.10.1 Public Buildings and Grounds

Table 13-2 below summarizes buildings and facilities owned, leased, and/or operated by Yuba County. This information was provided by John C. Brown (Director, Department of General Services, pers. comm., September 1992).

13.10.2 Special Districts

A broad spectrum of public services is provided through a variety of independent special districts. Some of these are single-purpose entities, such as cemetery, school, drainage, fire, sewer or sanitation, public lighting, road maintenance, and landscape districts. Many of these are alluded to under specific headings throughout this document; for example, districts providing fire protection are discussed under the heading of Fire Protection Services. Other districts, such as community services districts (CSDs) and public utilities districts (PUDs) are often formed to provide multiple services under a single administrative authority. A listing or description of some of these special districts, particularly those not thoroughly explained elsewhere under more specific topical headings, is provided below. Community services districts in Yuba County appear on Figure 13-3. Special districts serving the Linda and Olivehurst areas are shown on Figures 13-4 and 13-5.

Loma Rica/Browns Valley CSD provides fire and emergency rescue and medical aid services to a 98 square mile area. The District's Volunteer Fire Department provides the area with 16 fire fighters and emergency response personnel and maintains two pre-1970 fire engines, which are operated from the CDF fire station in Loma Rica. As discussed in Section 9.2.1, CDF and the Loma Rica/Browns Valley CSD cooperate through informal arrangements and formal agreements. The CSD currently serves about 1,600 households and businesses and plans for an estimated growth of 100+ units/year. The



proposed Prairie Creek Planned Unit Development would increase the service area population by about 66 percent at buildout in about 10 to 15 years. This CSD can provide other community services under its authority, but it does not perceive a present need to do so. As the number of residents in the District increases, the CSD may assume a greater role in providing additional services, such as recreation activities (Silvio Poggi, District Manager, pers. comm., September 1992; Research Associates 1991a:19; 1991b:20).

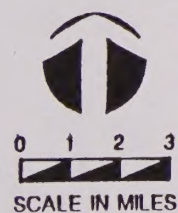
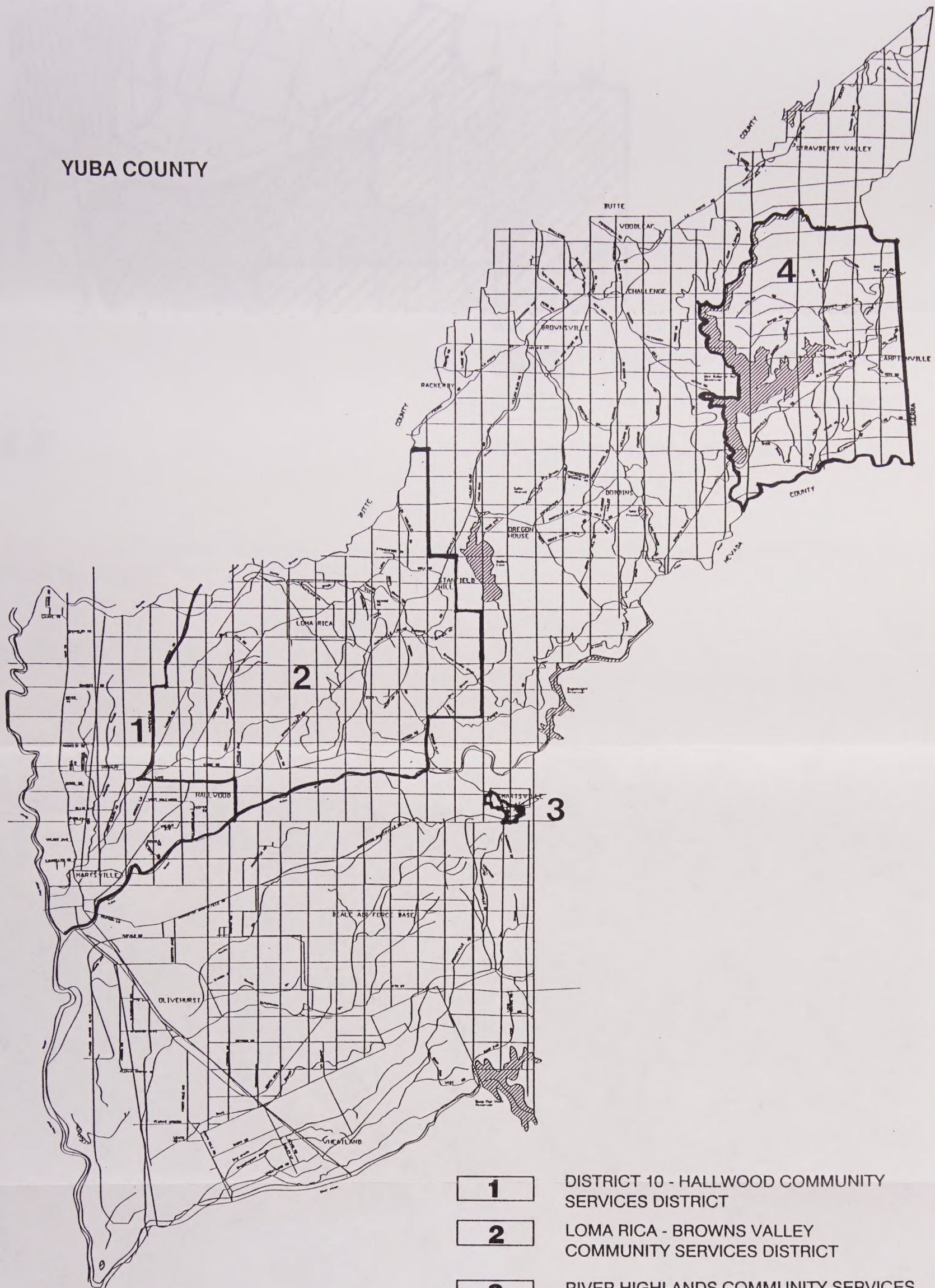
District 10-Hallwood CSD includes lands north of the incorporated limits of Marysville up to the Butte County Line. As shown on Figure 13-3, the Feather River forms the western boundary and Mathews Lane and Ramirez Road form the eastern District boundary. In the southern portions of the District, the boundary extends eastward to encompass the community of Hallwood. The District 10-Hallwood CSD provides fire protection and rescue within its service area through a contract with the City of Marysville Fire Department. The District itself owns no fire protection facilities (Charles Cook, Chairman of the Board, District 10-Hallwood CSD, pers. comm., September 1992).

Olivehurst Public Utility District (OPUD) provides water, sanitary sewer and wastewater treatment, street lighting, recreation, and fire protection services. These services are described under appropriate headings elsewhere in this Paper.

River Highlands CSD was formed about "10-12 years ago" but is not presently providing public services. A Community Plan and EIR are in progress for the District's Sphere of Influence and there are two proposed developments within the District, River Highlands and Gold Village Estates. As development progresses in these areas, they will be annexed into the District, which then will provide for water supply, sewage treatment, road maintenance, and upkeep of the drainage system (Warner Phillips, District Engineer, River Highlands CSD, pers. comm., September 1992).

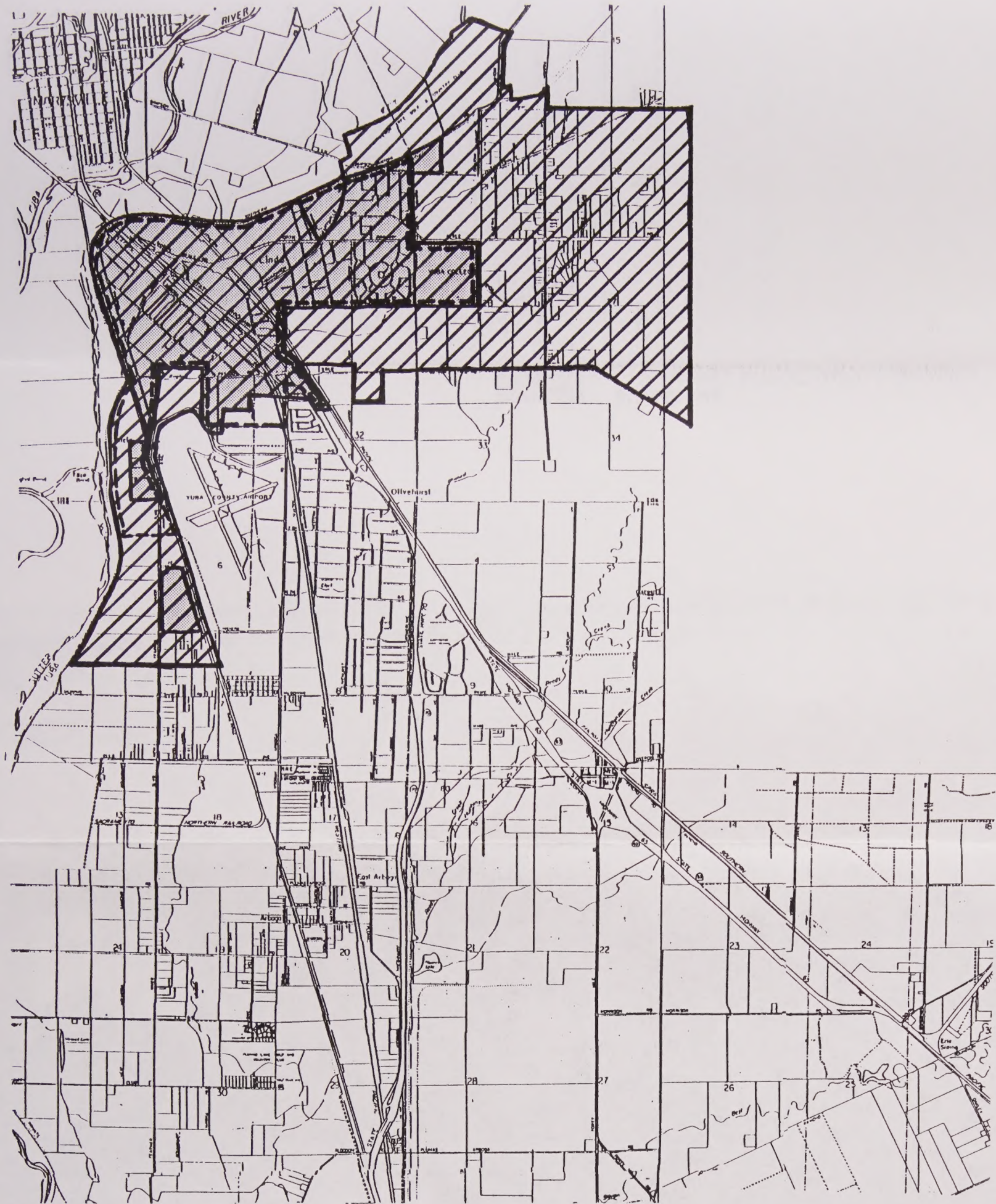
Camptonville CSD provides water supply and fire protection and soon will assume the functions of the local cemetery district (Ethel McElfresh, District Manager, Camptonville CSD, pers. comm., September 1992).

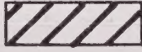
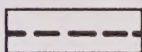
YUBA COUNTY



- 1 DISTRICT 10 - HALLWOOD COMMUNITY SERVICES DISTRICT
- 2 LOMA RICA - BROWNS VALLEY COMMUNITY SERVICES DISTRICT
- 3 RIVER HIGHLANDS COMMUNITY SERVICES DISTRICT BOUNDARY
- 4 CAMPTONVILLE COMMUNITY SERVICES DISTRICT

SOURCE: Yuba County Local Agency Formation Commission

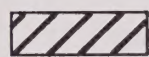
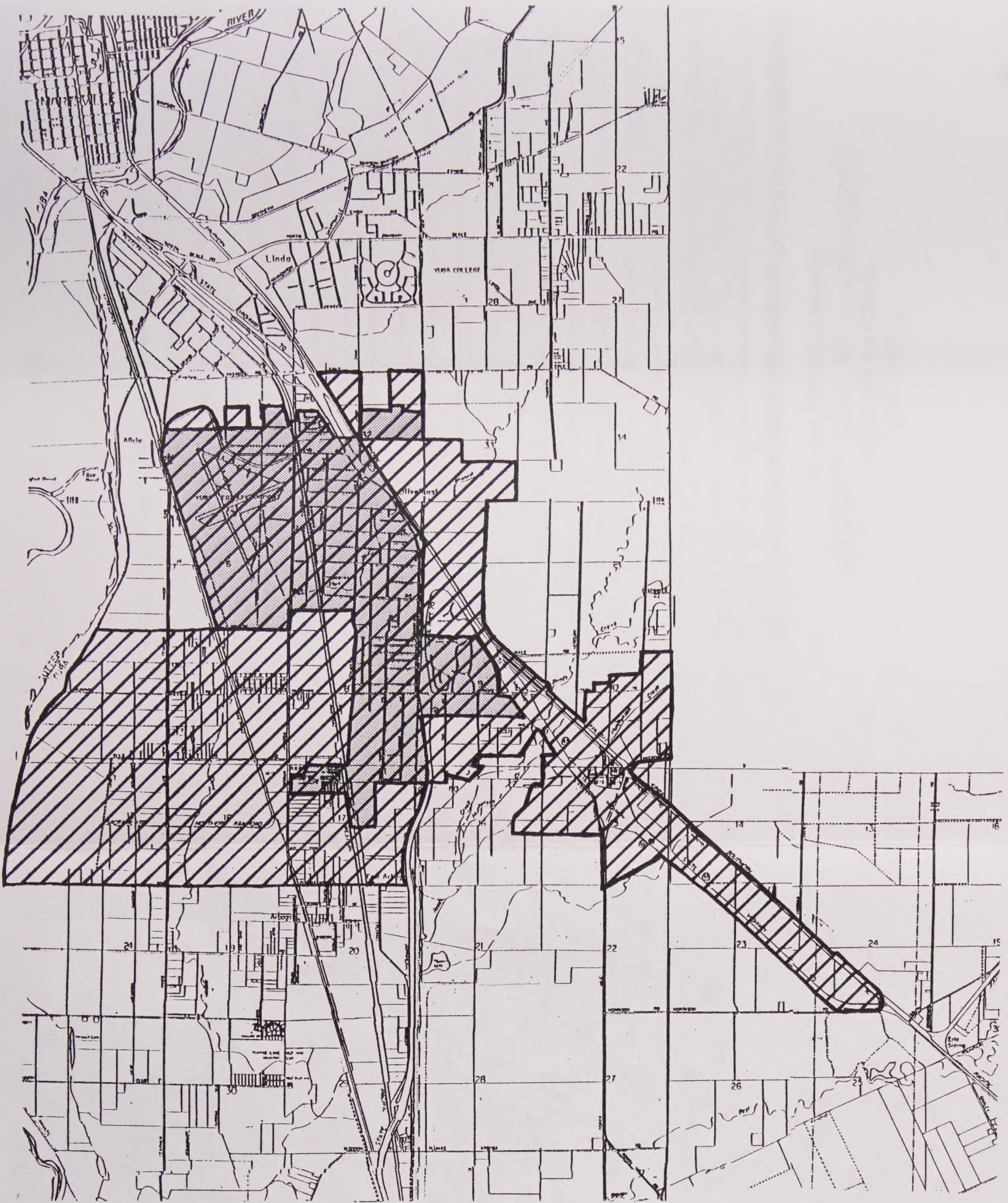


-  LINDA COUNTY WATER DISTRICT SPHERE OF INFLUENCE
-  LINDA COUNTY WATER DISTRICT BOUNDARY
-  LINDA STREET LIGHTING DISTRICT

NOTE: See Figure 9-1 for Linda Fire District

SOURCE: Yuba County Local Agency Formation Commission





OLIVEHURST PUBLIC UTILITY DISTRICT
SPHERE OF INFLUENCE



OLIVEHURST PUBLIC UTILITY DISTRICT
BOUNDARY

SOURCE: Yuba County Local Agency Formation Commission



TABLE 13-3
COUNTY OF YUBA
INVENTORY OF EXISTING FACILITIES
(Actual Occupied Space)

DEPARTMENT	SQUARE FEET
COURTHOUSE: 215 Fifth Street, Marysville, CA 95901	
Automotive Services	2,860
Board of Supervisors	2,808
County Administrator	504
County Counsel	1,185
Court Reporter	125
District Attorney	4,318
District Attorney-Family Support Division	3,540
Sheriff's Office - Jail	77,736
Juvenile Traffic	241
Municipal Court	9,743
Risk Management/Personnel	1,228
Probation	5,631
Public Guardian	544
Sheriff's Office - 1st Floor	13,696
Sheriff's Office - Civil Department	653
Superior Court	4,000
Victim Witness	567
Law Library	207
TOTAL: 129,586	



DEPARTMENT	SQUARE FEET
SOUTH ANNEX: 938 14th Street, Marysville, CA 95901	
Agricultural Commissioner	4,133
Building and Planning	5,232
Buildings and Grounds	4,428
Central Services	1,893
Housing Authority	1,000
Victim Witness	525
Print Shop	1,500
Office of Education	5,232
Veterans Service	1,900
Environmental Health (modulars)	1,344
Public Works	5,851
Superior Court	4,641
Courtrooms	4,316
Holding Cells	996
TOTAL: 42,991	
NORTH ANNEX: 935 14th Street, Marysville, CA 95901	
Assessor	5,162
Auditor	4,103
Clerk/Recorder	4,235
Treasurer	2,500
Office of Emergency Services (933 14th Street)	1,000
TOTAL: 17,000	
NEW STORAGE BUILDING: 14th Street	
	13,750
TOTAL: 13,750	



DEPARTMENT	SQUARE FEET
PEACH TREE MALL	
*Social Services	44,814
*GAIN	10,823
*Clinic	9,260
*Public Health	6,893
TOTAL: 71,790	
OTHER DEPARTMENTS	
*Airport	49,043
Animal Control	1,652
*JDTD	9,360
Juvenile Hall	15,700
Library	22,717
*Yuba-Sutter Enterprise Zone	1,944
TOTAL: 100,416	

*Leased Space

Source: Yuba County General Services Department, September 1992

Sutter-Yuba County Mosquito Abatement District is a bi-county agency that has its own Board of Trustees independent of the County Board of Supervisors. In Yuba County, the District serves the Sacramento Valley area approximately as far east as the intersection of Spring Valley Road and Highway 20. The District sprays insecticide as needed or in response to specific calls. In summer, the District sprays in Marysville, Wheatland, Linda, and Olivehurst. It arranges for aerial spraying of rice fields by contract. The District conducts extensive surveillance and inspection operations and mapping of new roads and subdivisions that are incorporated into the inspection schedule. Other activities include planting mosquito fish and draining fields and other areas where water stands due to clogged pipes or drains (Ron McBride, Manager, Sutter-Yuba County Mosquito Abatement District, pers. comm., October 1992).



Following is a list of cemetery districts in Yuba County: Browns Valley, Brownsville, Camptonville, Keystone (in Dobbins), Lofton (consolidated with Wheatland Cemetery District), Peoria (Marysville), Smartville, Strawberry Valley, and Wheatland. The boundaries of these districts are shown on Figure 13-6.

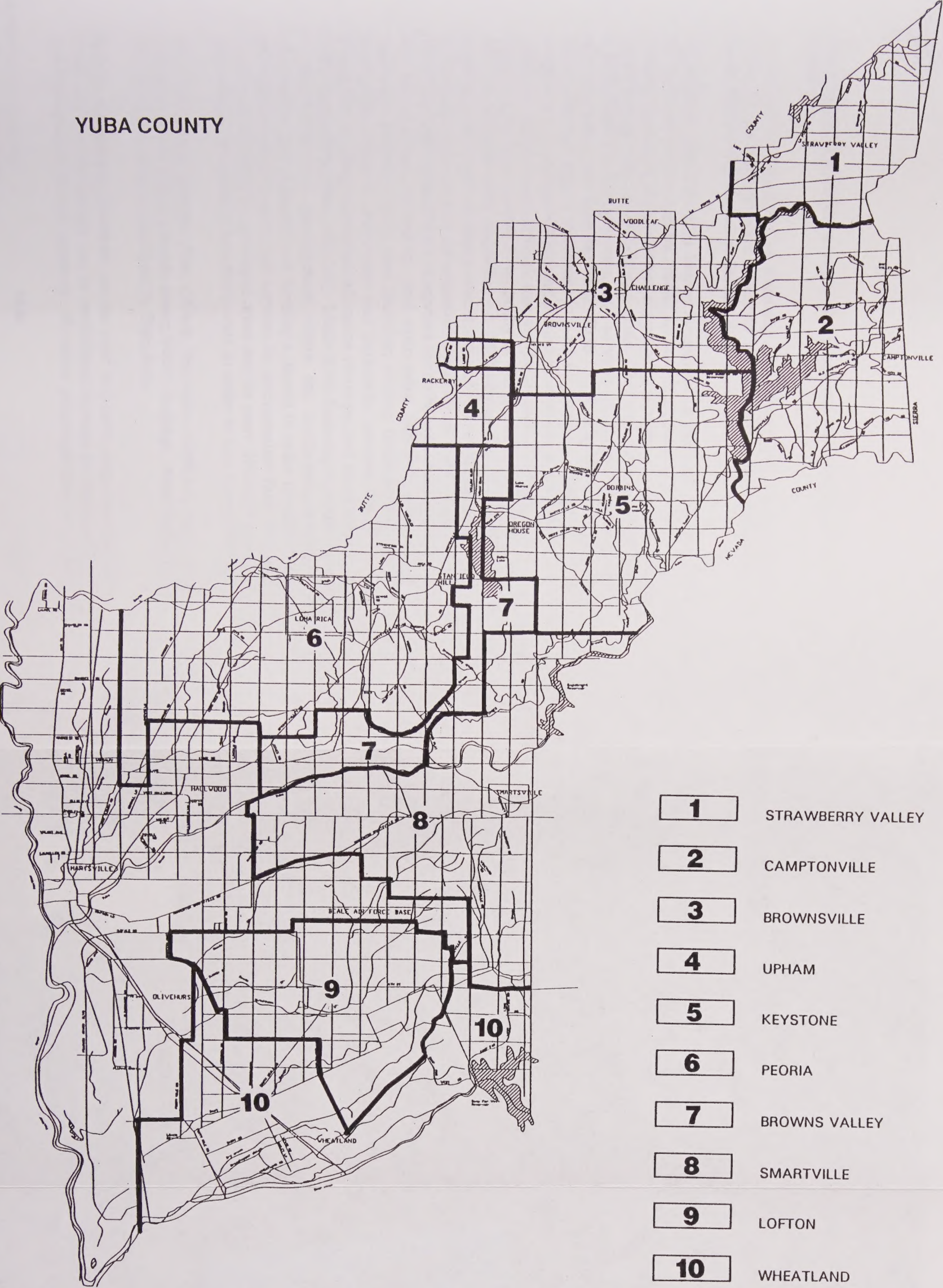
13.11 FUNDING PUBLIC SERVICE FACILITIES AND GROWTH ACCOMMODATION – SPECIAL DISTRICTS, DEVELOPER EXACTIONS, AND OTHER FUNDING AND PLANNING OPTIONS

In most California counties, traditional forms of government revenues such as property tax are not sufficient to cover the cost of needed infrastructure. It is mandatory, therefore, that new and creative ways of meeting capital improvement costs as well as operations and maintenance costs be identified. This need has become particularly acute since voter-imposed limitations on local taxes (i.e., Proposition 13) and reductions in State support to local and county governments. Nor can developers afford all of the infrastructure costs of desirable development. If Yuba County is to attract desirable development and compete with other jurisdictions for economic development, financing plans must be implemented that permit County government to meet public infrastructure and service demands while making development economically feasible for the private sector.

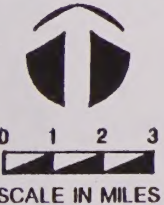
13.11.1 Infrastructure Financing and Fees

There are a variety of ways to finance facilities and services that are needed to implement the *General Plan*. Four principal funding sources are taxes, exactions, fees and assessments. While taxes raise revenue for general purposes, the other sources are used to finance specific improvements or services. Exactions include dedications of land, improvements, or in-lieu payments imposed on new development to fund construction of capital facilities. The type and intensity of exactions imposed are limited by the finding of a burden-created nexus (i.e., connection) between the actual proposed development and *General Plan*-mandated infrastructure requirements. Types of fees include impact and/or in-lieu fees, which are in the category of exactions, or user fees that can be used to defray the operating costs of providing facilities or services. Special assessments are one of the oldest means of funding construction of infrastructure, facilities, and in some cases, services. Special assessments are charges made by a government against a property owner for that part of the cost of public improvements

YUBA COUNTY



- 1 STRAWBERRY VALLEY
- 2 CAMPTONVILLE
- 3 BROWNSVILLE
- 4 UPHAM
- 5 KEYSTONE
- 6 PEORIA
- 7 BROWNS VALLEY
- 8 SMARTVILLE
- 9 LOFTON
- 10 WHEATLAND



SOURCE: Yuba County Local Agency Formation Commission



made adjacent to his/her property that is especially useful or beneficial to that property.

A number of infrastructure financing methods are listed and summarized below. Some may be better suited to Yuba County's needs than others and these will be emphasized in further discussion.

Mello-Roos Districts, also known as community facilities districts (CFDs), Mello-Roos districts can be created to finance a broad range of facilities and services, including those that benefit property in a general way, as opposed to benefiting specifically identified parcels. This versatile method of financing public facilities, infrastructure, and services associated primarily with new development arose from the Mello-Roos Community Facilities Act of 1982. More than one agency may enter into a joint community facilities agreement to allow for the disbursement and utilization of proceeds from one CFD. The types of facilities and services that can be financed through Mello-Roos is limited only by the scope of authority of the particular agency to construct, own or operate such facilities. A Mello-Roos district may finance the purchase, construction, improvement, expansion, or rehabilitation of any real or tangible property with an estimated useful life of five or more years. The following types of facilities and services are authorized (but not limited to) by the Act: parks, recreation, and open-space facilities; school sites and buildings; libraries; child care facilities; utilities facilities; police and fire protection services; ambulance and paramedic services; flood and storm protection systems; hazardous substance cleanups; and many other purposes (Merritt and Robinson 1991:1-4). Mello-Roos financing is particularly suited to large-scale new development where the landowners/developers are cooperative and supportive of forming a district in order to publicly finance the needed infrastructure and services to accommodate their development. Formation of CFDs in developed areas may be more difficult because of the requirement to obtain a two-thirds vote in order to levy the special tax.

The *East Linda Specific Plan* (Wade Associates 1989:7-4) recommended formation of a CFD to provide sewer, water, drainage, street improvements, and library services to the Specific Plan Area.

Special Assessment Districts can be used to finance improvements when a direct and specific benefit can be established between the improvements and specified parcels of real property. Revenue generated from bonds sold for



special assessment districts can be used for construction, installation or maintenance of facilities.

The *East Linda Specific Plan* (Wade Associates 1989:7-4 to 7-5) recommended formation of a Landscape and Lighting District to fund acquisition of parklands; park improvements; park landscaping, irrigation, and lighting; park maintenance and maintenance of landscaped corridors along arterial streets adjacent to single-family subdivisions within the District. At the time this recommendation was made, the County had not yet enacted a Quimby Ordinance to fund parkland acquisitions.

General Obligation Bonds may be used for financing the acquisition or improvement of real property only. The issuance of general obligation bonds requires approval by two-thirds of the voters casting ballots.

Revenue Bonds may be used for financing projects which generate revenues, such as wastewater treatment plants and convention centers. The revenues generated by these projects are used to repay the bonds, and no voter approval is required.

Certificates of Participation generally involve a form of lease transaction, and a source of repayment must be identified. This method does not require a public hearing or election.

Integrated Financing District. A fairly new mechanism, integrated financing districts can be used on their own or in conjunction with other financing tools to construct improvements without imposing a financial burden on the portions of the districts not yet ready to develop. Major infrastructure improvements can be financed when only a portion of the benefitted land is initially able to bear the costs of such improvements by providing for contingent liens to be placed on land to be developed later, so that each property will bear its fair share of the cost of the improvement at the time the development begins. This type of district can be used when a developer is resistant to forming a Mello-Roos district and when the particular development project has significant infrastructure needs that must be constructed before the development can occur, but which will also benefit other developers that are developing their property on slower schedules.



Community Rehabilitation Districts provide financing for the rehabilitation, renovation, repair or restoration of existing public facilities.

Infrastructure Financing Districts use tax increment financing in areas outside of redevelopment areas. The tax increment may be used for payment of Mello-Roos bonds. "Tax increment" is the property tax "increment" above the property tax level for a base year, which increases over time as property is improved and/or sold.

Redevelopment. Adoption of a redevelopment plan, and establishment of a redevelopment project area, also enables the County to use tax increment financing, either on a "pay-as-you-go" basis or to repay tax increment bonds to fund capital improvements within the project area. Because of the requirements under State law, as a practical matter this type of funding is only an option for the unincorporated communities in Yuba County where a potential for redevelopment exists.

Developer Fees differ from the above examples of "pay-as-you-use" financing, where revenue becomes available on a "lump-sum" basis through the issuance of bonds or similar instruments that are repaid through taxes or assessments. In contrast, developer fees are a form of "pay-as-you-go" financing where funds become available for construction of public improvements or acquisition of land, etc., on an "incremental" basis. Developer fees can ensure that new development will pay its fair share for providing the necessary facilities, or in some cases, its fair share of the cost of mitigating identified environmental impacts. Developer fees can generate supplemental revenues that can reduce future special taxes or assessments or free up tax increment. They also can generate reimbursement revenues for property owners or public agencies who have previously paid more than their fair share of public improvement costs.

Once areas are designated for desired growth, a Public Facilities Financing Plan can be developed that can provide an overall strategy for financing required facilities and identify an equitable mix of developer fees and public financing mechanisms to provide the necessary improvements to adequately serve new development and/or correct existing deficiencies.



13.11.2 Ability of County General Government to Accommodate Growth and Development

When new development is proposed and planned for, most attention is generally given to public services that are directly impacted by development, such as police and fire protection, schools, sewer and water service. General governmental services are also impacted by growth and development, yet typically are not addressed in evaluations of new plans and projects. These services include the courts and correctional system, health, welfare, County administration, Auditor, Treasurer and Assessor, to name a few. Fee recovery by such County departments is typically minimal. Like most rural counties in California, Yuba County is struggling to operate State-mandated programs and still provide some discretionary services desired by residents (such as Sheriff's patrols, parks and libraries).

The ability of County general government to accommodate growth and development depends largely on the growth rate. Slow, steady growth is obviously easier to plan for and to adjust operating budgets accordingly. Unfortunately, development does not always occur at a slow, steady pace. Planning for anticipated growth by designating specific growth areas, establishing strong development policies through the *General Plan* process, and developing a financing plan to accommodate necessary services needed for anticipated growth will provide some assistance by freeing some of the general fund revenues that might otherwise be encumbered for new development needs. A comprehensive financing plan that also recognizes the needs of general government would help the County to benefit from future growth rather than becoming its victim.

Effective October 26, 1992, the Yuba County Board of Supervisors adopted public facilities fees in accordance with the *Yuba County Development Impact Fee Study* prepared for the County by David M. Griffith & Associates, Ltd. (February 1992). This Study identified nine geographic areas of benefit used in calculating impact fees for certain types of facilities. The Study also analyzed the impact of development on specific types of facilities and services provided by the County and recommended impact fee calculations for each type of facility. The cities of Wheatland and Marysville have been exempted from the County's impact fee ordinance.



Services and facilities for which development impacts were studied and fees established include general government (including administrative and support departments as well as line departments such as Planning and Building, Public Works, the County Assessor and County Recorder); courts and criminal justice (including the Superior Court, Municipal Court, District Attorney, Probation Department, County Jail and Juvenile Hall); health and social services (Health Services Department, County Health Clinic, Mental Health Department, and Social Services Department); the County library system; the Yuba County Sheriff's Department; parks and recreational facilities; road improvements; and drainage improvements. Public facilities fees have been established for school districts and fire protection as well.

Fees for various types of new development in the unincorporated area were established; the fees for single family dwellings are summarized in Tables 13-3 and 13-4 by area of benefit, and are based on projected population and development through 2010 and levels of service established in the Study. The fees were designed to be phased in over a three-year period. However, the second phase was postponed due to economic conditions and will be re-evaluated in January 1995 (Rick Helman, Senior Planner, Planning and Building Services Department, pers. comm., May 1994).

13.11.3 County Service Areas

County Service Areas (CSAs), once formed, can provide multiple services, whereas assessment districts generally serve a single purpose. CSAs avoid overlapping or stacked assessment districts. Another advantage, as opposed to special districts, is that the Board of Supervisors acts as the governing board of the CSA, so that the County retains authority and discretion over its activities. Also, because a CSA operates under a separate budget, costs for improvements, maintenance, staffing, and operations will not dilute existing County revenue and personnel. CSAs typically provide such services as fire protection, water supply, wastewater disposal, cemetery maintenance, road maintenance, and public street lighting. Revenues for CSAs can come from a variety of sources, including user fees, property taxes, and developer-paid impact fees. An important factor in forming a CSA is that a particular facility or service may be constructed or operated at least cost provided it serves a particular geographic area at specified levels. For some facilities, such as water supply and wastewater disposal facilities, the larger the service area, the



lower the unit cost. The optimum service area in terms of cost-efficiency should be considered in forming CSAs (Nicholas et al. 1991:55-57).

There are 40 CSAs established in Yuba County that are listed in the Assessor's book. With a single exception, they were all formed in conjunction with subdivisions for the purpose of providing road maintenance within the subdivision. One of the CSAs was also chartered to provide for construction and maintenance of drainage facilities, and one was formed for the sole purpose of providing maintenance of public street lighting. Although these CSAs are listed by the Assessor's office, they are all essentially inactive. The majority of them are in the foothill areas of the county.



TABLE 13-4
SUMMARY OF TRAFFIC, DRAINAGE, COUNTY AND SCHOOL
DISTRICT PUBLIC FACILITY FEES
PER SINGLE FAMILY DWELLING UNIT¹

AREA OF BENEFIT	FEES			
	TRAFFIC IMPACT FEE	DRAINAGE IMPACT FEE	COUNTY PUBLIC FACILITY IMPACT FEE	SCHOOL IMPACT FEES ⁴
2 Linda/Olivehurst	\$1,278	\$ 580 ²	\$ 2,119	\$5.25/sq. ft.
3 Plumas Lake	1,321	N/A	2,119	\$5.25/sq. ft.
4 Wheatland/Camp Far West	779	N/A	2,119	\$5.25/sq. ft.
5 Beale Air Force Base	554	N/A	2,119	\$5.25/sq. ft.
6 Hammonton/Smartville	438	N/A	2,119	\$5.25/sq. ft.
7 Hallwood/District 10	1,444	263 ³	2,119	\$5.25/sq. ft.
8 Loma Rica/Brown's Valley	2,396	N/A	2,119	\$5.25/sq. ft.
9 Oregon House/Strawberry Valley	2,872	N/A	2,119	\$5.25/sq. ft.

¹ Table summarizes third-year fees (after phase-in is completed)

² Applies in South Yuba Drainage Area only.

³ Applies in Hallwood Drainage Area only.

⁴ Maximum fee of \$8,818.

Source: Yuba County Public Facilities Fees and School District Public Facilities Fees Ordinance, 1992.



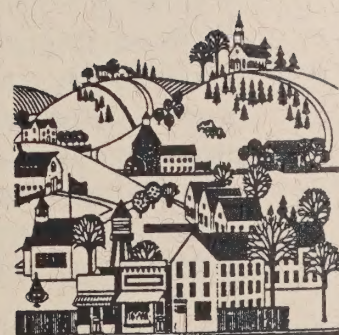
TABLE 13-5
SUMMARY OF FIRE MITIGATION FEES
PER SINGLE FAMILY DWELLING UNIT

Fire Service Provider	Per square foot with sprinklers	Per square foot without sprinklers	Flat Fee
Loma Rica/Browns Valley			
Served by hydrant	\$ 0.25	\$ 0.50	
Not served by hydrant	0.35	0.68	
Smartville			
Served by hydrant	0.27	0.53	
Not served by hydrant	0.34	0.68	
Linda			
Served by hydrant	0.25	0.50	
Not served by hydrant	0.33	0.65	
Olivehurst	0.20	0.39	
Foothill			
Served by hydrant			\$200
Not served by hydrant			400
Plumas-Arboga			
Served by hydrant			200
Not served by hydrant			400



Fire Service Provider	Per square foot with sprinklers	Per square foot without sprinklers	Flat Fee
Brownsville			
Served by hydrant			200
Not served by hydrant			400
Dobbins/Oregon House			
Served by hydrant			200
Not served by hydrant			400
District 10/Hallwood			
Served by hydrant			200
Not served hydrant			400

Source: Yuba County Public Facilities Fees and School District Public Facilities Fee Ordinance, 1992.



SECTION FOURTEEN

SOCIAL AND ECONOMIC FACTORS



SECTION FOURTEEN SOCIAL AND ECONOMIC FACTORS

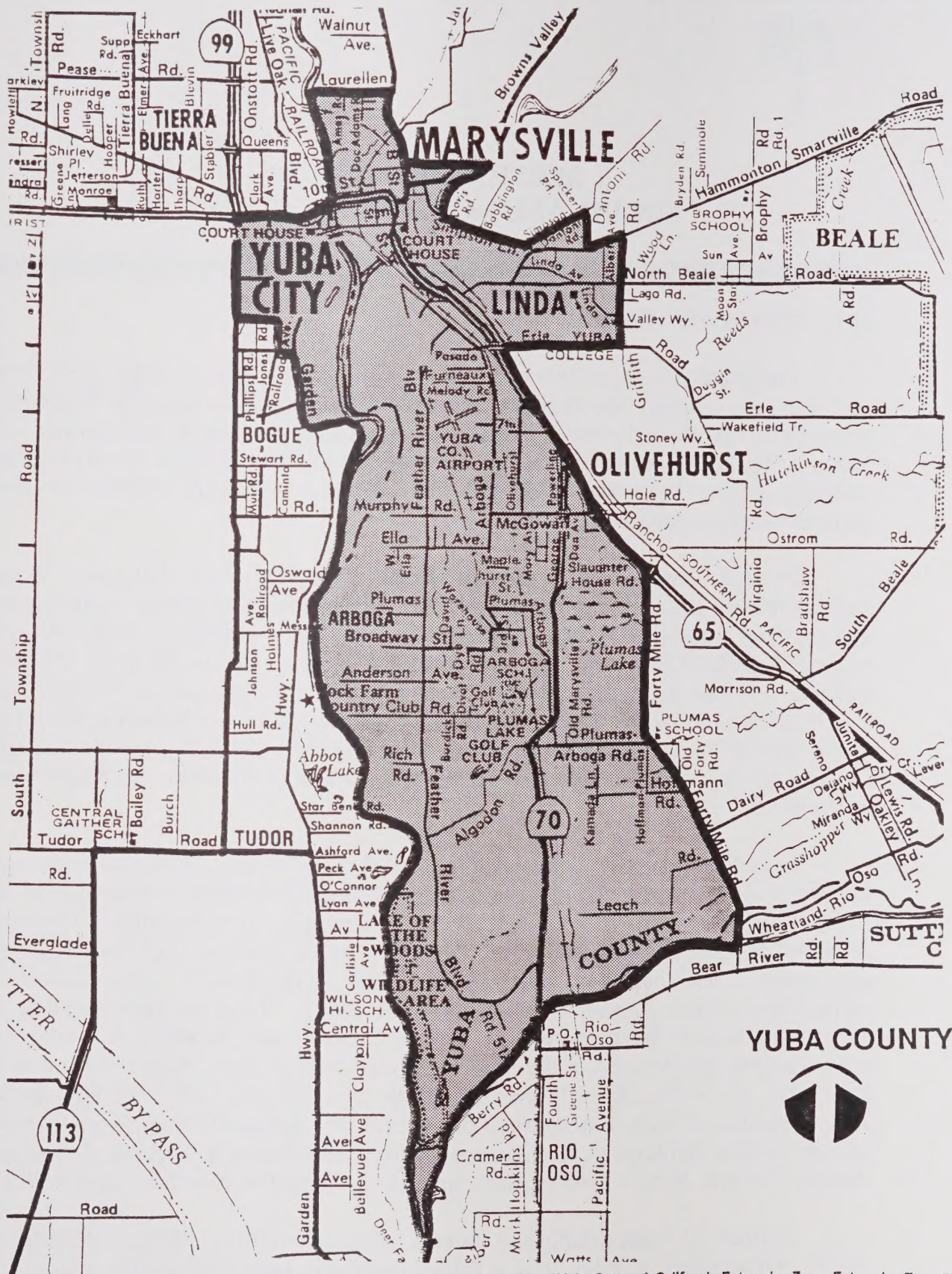
14.1 ECONOMIC BASE

The primary components of the Yuba County economic base are agriculture and related activities, the military, retail trade, professional services (consisting primarily of health and educational services), construction and manufacturing. As shown in Table 14-1 which follows, agricultural employment in Yuba County actually increased during the period 1980-1990, the opposite of what has occurred in other predominantly agricultural counties.

In their *1991 Annual Report*, Beale AFB reported that their direct expenditures in the local area totaled \$87.3 million (including payroll, construction and services, materials, services and supplies). Using a multiplier of 2.5119, it is estimated in the Report that the total local economic impact of the Base is \$219.3 million. It is also estimated that 1,432 secondary jobs are created due to economic activity generated by the Base. The Base's region of economic impact is identified in the *Annual Report* as the area within a 50-mile radius of the Base, encompassing Oroville to the north, Nevada City to the east, Colusa to the west and Sacramento to the south.

In addition to industrial development in the City of Marysville, there are eight industrial parks owned by the County in the unincorporated area adjacent to the Yuba County Airport west of Olivehurst. According to promotional materials prepared for the Airport Industrial Park, 265 acres are available for industrial development, with improved sites ranging in size from 2.5 to 45 acres (County of Yuba, *Yuba County Airport Industrial Parks*, no date). There are approximately 77 acres remaining to be marketed for sale or lease at the Airport. A number of industries are also located in the unincorporated area south of Marysville, on or in the vicinity of Feather River Boulevard. Table 14-1 presents a list of manufacturers and processors in Yuba County, their product(s), and number of employees (County of Yuba Industrial Development Department and Yuba-Sutter Enterprise Zone Lead Agency, *Yuba & Sutter Counties Manufacturers & Processors Directory*, June 1992).

Portions of Yuba County and Sutter County are within a California Enterprise Zone. Designated in 1986, it is a four-jurisdiction, joint partnership among the counties of Yuba and Sutter and the cities of Marysville and Yuba City. The Yuba-Sutter Enterprise Zone encompasses 68.5 square miles, including large portions of Linda, Olivehurst and Marysville within Yuba County (Figure 14-1). Enterprise



Source: Counties of Yuba-Sutter, A California Enterprise Zone, Enterprise Zone Brochure



zones offer existing and new businesses a variety of tax and other incentives which can reduce the cost of doing business or increase revenues. To receive an enterprise zone designation from the State of California, local government must commit to expedite permit processing, reduce construction and permit-related fees, and provide assistance in employee hiring and training. In return, the State will provide hiring tax credits of up to \$19,000 per employee, sales tax credits of up to \$1.2 million on machinery and parts purchased, up-front expensing of depreciable property, tax-free interest income for lenders, a 15-year loss carryover, and an employee tax credit. The State has approved a limited number of zones, and the Yuba-Sutter Enterprise Zone is the only one in the Sacramento Valley (Counties of Yuba-Sutter, a California Enterprise Zone, Enterprise Zone Brochure, no date).

A significant number of Yuba County residents work outside Yuba County, and that number is increasing. Of those employed, 23.6 percent worked outside the county in 1975, 26.6 percent in 1980, and 37 percent in 1990. While many of those working in another county commute to Sutter County, an increasing number of Yuba County residents commute to Sacramento for employment (*Yuba County Housing Element*; 1990 U.S. Census of Population and Housing).

14.2 EMPLOYMENT

Information on civilian employment in Yuba County by industry and occupation is presented in Tables 14-2 and 14-3 respectively. The tables are based on employment data from the 1980 and 1990 censuses, and demonstrate trends in various employment sectors during that period. Employment in four industry sectors decreased during the period 1980-1990: nondurable goods manufacturing (1.2 percent decrease), communications and other public utilities (20.9 percent decrease), wholesale trade (7.2 percent decrease) and public administration (16.1 percent decrease). The largest increases were reported in other professional and related services (114.6 percent increase), health services (90.3 percent increase), construction (65.4 percent increase) and business and repair services (60.2 percent increase).

Only one category of occupation reported a decrease during the period 1980-1990: private household (43.8 percent decrease). Categories showing the greatest increase included technicians and related support (95 percent increase), transportation and material moving (56.4 percent increase), professional specialty (35.2 percent increase) and executive, administrative and managerial (33.3 percent increase).



TABLE 14-1
YUBA COUNTY MANUFACTURERS AND PROCESSORS
1992

MANUFACTURER/ PROCESSOR	NUMBER OF EMPLOYEES	PRODUCT(S)
A. Ferguson Engineering Inc.	20	camper shells
Acme Reinforced Plastics	15	reinforced plastics
All Pure Chemical Company	56	water purification chemicals
Appeal Democrat	124	newspaper printing
Bill's Casing Tong Service	32	hydraulic casing tongs, drill pipe, laydown machine, casing pick-up, machine slips, elevators
Blue Shield	260-300	medical claims processing
Bluett Printing	4	printing
California Human Development Corporation	5	business and industrial job training, welding, electronic assembly
Casa Sanchez Tortilla Factory and Restaurant	4	tortillas and Mexican food
Ceco/Windsor Door Company	67	rolling steel doors, sectional garage doors
Christy Concrete Products	17	reinforced fiberglass underground utility boxes
Classic Spas, Inc.	10	spas, swimming pools
Coca-Cola Bottling Co.	19	bottling, processing
Crown Solar Products, Inc.	20	skylights
D&D Signs	4	retail & manufacturing exterior & interior signage; sales & service



MANUFACTURER/ PROCESSOR	NUMBER OF EMPLOYEES	PRODUCT(S)
Danna & Danna, Inc.	20-159	prunes, walnuts, squash, wheat, melons, growers, packers & shippers
Dibble, Inc.	21	cropdusting
Dunne Printing & Design	5	commercial printing
DPM Foods	250	meat packing & processing
Feather River Foods, Inc.	119	raisins, walnuts, almonds, prunes
Feather River Forest Products	65	lumber products
Frank M. Booth, Inc.	180	stainless steel fabrications, sheet metal fabrications
Hardwoods Unlimited	3	wood exporting, gun stock manufacturing
Helder Manufacturing Co.	5	agricultural equipment, steel fabrication
Hollywood Bases, Inc.	10	baseball bases, home plates, and pitching rubbers
Imig's Custom Cabinets	2	custom cabinets
International Turbo Center, Inc.	10	after market turbochargers for diesel engines
Jaxon Enterprises ¹	25 ²	truck maintenance facility
Krueger Aviation	4	aircraft maintenance & modification
Marysville Forest Products	125	lumber
Mathews Dryer	6	prune dehydrating
Medallion Millwork Inc.	60	wood mouldings
Naumes, Inc.	50-1,200	fruit packaging, distribution
New England Log Homes	13	log homes
Nor-Cal Moulding Co.	15	wood mouldings
Norcal Lumber Co., Inc.	35	trusses



MANUFACTURER/ PROCESSOR	NUMBER OF EMPLOYEES	PRODUCT(S)
Normart Printing	12	commercial printing
Northern California Marble Works	2	cultured stone products, bathroom countertops
Northwest Coatings, Inc.	3	seamless coatings, asbestos abatement products
Pacific Flight Services	7	aircraft rental, repair, charter, taxi, fuel, service, sales, instruction
Pacific Millwork, Inc.	26	mouldings product distributor
Seven-Up Bottling Co.	22	distribution
Sierra Cedar Products	15	cedar fencing boards
Sierra Oaks	9	custom cabinets
Sithe Energies USA, Inc.	25	co-generation plant
SMC Cabinets	25	production kitchen cabinets, modular garage cabinets
Sunsweet Dryers	80	dehydrating prunes
Sutter Forest Industries, Inc. ¹	50 ²	cut stock lumber for wood windows & doors
The Candy Box	7	candy manufacturing
Trinco	45	ready-mix and concrete materials
Union Lumber Co.	3	building materials
United Parcel Service	14	delivery service
UP Coatings/Universe Paint Co.	40	paint manufacturing
Water Works Manufacturing Co.	46	pipe and steel fabrication
West Coast Fuel Supply, Inc.	18	biomass fuel processing facility
Wilson Manufacturing	3	specialized agricultural equipment



MANUFACTURER/ PROCESSOR	NUMBER OF EMPLOYEES	PRODUCT(S)
Wrights Plastics, Inc.	8	counter tops
Yuba County Job Development and Training Department	12	business and industrial job training and placement; JTPA/GAIN programs
Yuba Natural Resources	35	production of silica rock, ground silica sand, flour products
Yuba River Moulding and Millwork Co.	140	wood mouldings, millwork products
Yuba Sutter Aviation	3	aircraft repair and sales

¹ new business

² anticipated number of employees

Source: County of Yuba Industrial Development Department, Yuba-Sutter Enterprise Zone Lead Agency, Yuba & Sutter Counties Manufacturers & Processors Directory, June 1992.



TABLE 14-2
YUBA COUNTY CIVILIAN
EMPLOYMENT BY INDUSTRY: 1980 AND 1990

INDUSTRY	1980		1990		1980-1990 CHANGE	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
Agriculture, forestry, fisheries, mining	1,338	9.2	1,786	9.7	448	+33.5
Construction	1,015	7.0	1,679	9.2	664	+65.4
Nondurable goods manufacturing	703	4.8	695	3.8	(8)	-1.2
Durable goods manufacturing	1,020	7.0	1,266	6.9	246	+24.1
Transportation	623	4.3	885	4.8	262	+42.1
Communications and other public utilities	532	3.7	440	2.4	(92)	-20.9
Wholesale Trade	536	3.7	500	2.7	(36)	-7.2
Retail Trade	3,005	20.6	3,307	18.0	302	+10.0
Finance, Insurance, Real Estate	605	4.2	879	4.8	274	+45.3
Business & repair services	527	3.6	844	4.6	317	+60.2
Personal, entertainment, recreation services	609	4.2	705	3.8	96	+15.8
Health services	749	5.1	1,425	7.8	676	+90.3
Educational services	1,374	9.4	1,553	8.5	179	+13.0
Other professional and related services	554	3.8	1,189	6.5	635	+114.6
Public Administration	1,365	9.4	1,176	6.4	(189)	-16.1
TOTAL	14,555	100.0	18,329	100.0		

Source: SACOG, 1980 Census of Population and Housing; 1990 Census of Population and Housing



TABLE 14-3
YUBA COUNTY CIVILIAN
EMPLOYMENT BY OCCUPATION: 1980 AND 1990

OCCUPATION	1980		1990		1980-1990 CHANGE	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
Executive administrative, managerial	1,070	7.4	1,426	7.8	356	+33.3
Professional specialty	1,324	9.1	1,790	9.8	466	+35.2
Technicians and related support	298	2.0	581	3.2	283	+95.0
Sales	1,490	10.2	2,009	11.0	519	+34.8
Administrative support, including clerical	2,327	16.0	2,920	15.9	593	+25.5
Private household	151	1.0	105	0.6	(46)	-43.8
Protective service	287	1.9	306	1.7	19	+6.6
Service, except protective and household	2,024	13.9	2,251	12.3	227	+11.2
Farming, forestry, and fishing	1,109	7.6	1,474	8.0	365	+32.9
Precision production, craft/repair services	2,093	14.4	2,548	13.9	455	+21.7
Machine operators, assemblers/inspectors	841	5.8	884	4.8	43	+5.1
Transportation and material moving	750	5.2	1,173	6.4	423	+56.4
Handlers, equipment cleaners, helpers	794	5.5	862	4.7	68	+8.6
TOTAL	14,555	100.0	18,329	100.0		

Source: SACOG, 1980 Census of Population and Housing; 1990 Census of Population and Housing



According to information provided by Beale AFB, there was a total of 3,442 active-duty military personnel employed at the Base in September 1991. In addition, approximately 1,360 civilians from the general area are employed on the Base (*Beale Air Force Base Economic Resource Impact Statement, 1991 Annual Report*, September 1991).

According to the State Employment Development Department *Annual Planning Information* (1992), employment in Yuba and Sutter counties is expected to expand at a rate of 12.8 percent from 1990 to 1997. As stated in that report:

However, growth will occur at a slightly slower pace early in the projection period, as a result of recessionary economic conditions, then pick up momentum towards the end of the period. Overall, the wage and salary employment levels are projected to rise moderately in all industry divisions, led by growth in **government, retail trade, services, and manufacturing.**

Employment in agriculture is expected to increase at a rate of 5.1 percent during the projection period. Employment in mining and construction is also expected to grow, primarily in gold ores, construction sand and gravel industries, general building and special trade contractors. Manufacturing employment is projected to increase at an overall growth rate of 22.2 percent, mainly in the food processing industry. Retail trade is projected to expand at a rate of 15.1 percent between 1990-1997; finance, insurance, and real estate is projected to expand at a moderate rate; and the services division is expected to experience substantial job gains (primarily in health services). Government is expected to account for the largest absolute job gains.

The 1991 annual average unemployment rate in Yuba County was 14.1 percent, ranking it as tenth highest in the State (Sutter County was second highest). The annual average rate statewide for 1991 was 7.5 percent. (Employment Development Department 1991:15).



SECTION FIFTEEN CULTURAL RESOURCES



SECTION FIFTEEN CULTURAL RESOURCES

Cultural resources are sites, artifacts, and features that relate to and provide evidence for past human cultural behavior. Cultural resources include sites, artifacts, and features of both the prehistoric and historic periods.

Sites are those locations where discernible changes to the natural environment have occurred as a result of human activity or occupation. *Artifacts* are those objects manufactured or altered by humans. *Features* include structures, cemeteries, fences, roads, dams, and other works of humans that are not sites *per se* of general human activity or occupation, but rather isolated objects that generally represent a single or specialized human activity. Features exist both alone or on a site. For example, within a prehistoric village *site*, archaeologists often refer to fire hearths as cultural *features*. Other features, such as stone walls, often exist outside any discernible cultural site.

The *prehistoric* period is that span of time during which human populations have occupied California, but before writing was introduced and historical records were kept. The *historic* period is the span of time during which written historical records of human activities have been maintained. In California, the historic period began when the first European explorers reached the state. Archaeologists place the beginning of human prehistory in California around 12,000 years ago. The first verified historical date is September 28, 1542, when two Spanish ships commanded by Juan Rodríguez Cabrillo entered the Bay of San Diego (Hoover et al. 1990:xi).

Many California archaeologists also arbitrarily recognize a protohistoric period in some parts of the state. The *protohistoric* period is that span of time after the discovery of California by Europeans, but before actual physical contact between the Indians and Europeans. Even before contact, many Indian cultures and populations were affected by European presence on the North American continent. For example, many native populations suffered epidemics of European diseases long before the actual local arrival of European or American people. Also, many European or American artifacts, such as glass beads, reached some Indian groups before the Indians ever had contact with European or American people.



Cultural sites that represent Native American or Indian occupation and activity (i.e., prehistoric and protohistoric sites) are generally referred to as *archaeological* sites. Cultural sites of the historic period that represent Euro-American occupation and activity are generally called *historic* sites. Some archaeologists refer to all cultural sites as archaeological sites, regardless of the period. A distinction is simply made between historic and prehistoric archaeological sites.

Archaeological sites, features, and artifacts that predate the historic period are the only source of information about the character and origins of Native Californian societies. Since these societies are essentially extinct, our only means of reconstructing these ways of life is archaeology. *Archaeology* may be defined as the process of reconstructing our human past by systematically excavating and analyzing the remains in archaeological sites. In addition to many types of artifacts, prehistoric archaeological sites, such as those that represent the hunter-gatherer societies of Yuba County, contain such clues to the past as animal and plant remains; human skeletal remains; cultural features, such as fire hearths, housepits, and human burials; and carbonized organic matter, often in the form of charcoal, the age of which can be determined through radiocarbon dating analysis. Historic period sites in California are easily distinguishable from prehistoric sites by artifacts made of pottery, porcelain, glass, metals and other materials not used in the region before European contact.

In order to interpret this information, it must be found essentially as it had been deposited. Once an archaeological site has been disturbed through natural forces, construction, or vandalism and objects are no longer in their original location, the interpretive value of a site is greatly diminished if not totally destroyed. Thus, in order to maintain our ability to reconstruct and interpret 12,000 years or more of human presence in California, it is crucial to preserve and protect as many archaeological sites as feasible. Those that cannot be preserved in the face of development must be identified, recorded, and if they appear to be significant, scientifically excavated so that the information they contain can be preserved after the sites have been destroyed.



15.1 CULTURAL SETTING

15.1.1 Archaeological Background

15.1.1.1 Central Valley

Much of what is presently known about the human prehistory of the valley portions of Yuba County is inferred from archaeological excavations of shellmounds in the Central Valley, Sacramento-San Joaquin Delta and San Francisco Bay regions. These excavations indicate what appear to be three distinct cultural periods, known to archaeologists as the Early, Middle, and Late horizons, spanning approximately the last 4,500 years. The Early Horizon is thought to represent the first permanent, year-round occupations of the Central Valley. It is not presently known with certainty if each horizon represents an ethnically or linguistically distinct population, but this seems likely in many areas of Central California. In some localities, horizons have been further subdivided into temporal phases, each marked by distinct cultural traits. The later phases of the Late Horizon almost always appear to represent the material culture of the people encountered in a particular locality when European or American contact occurred (Beardsley 1948; Moratto 1984).

At least two distinct language systems were present in much of Central California when Europeans and Americans arrived. Most of the Central Valley floor was occupied by people who spoke languages that anthropologists have grouped together as the California Penutian linguistic stock, consisting of five language families. In the surrounding foothills and mountains were groups of people who spoke languages classified as the Hokan linguistic stock.

Archaeologists and linguists have long theorized that the Hokan groups first visited or seasonally inhabited many portions of the Central Valley. They were displaced to the surrounding uplands by waves of people speaking Penutian languages. Archaeologists are divided as to whether the Early Horizon or Middle Horizon represents the initial Penutian penetrations and whether Penutian groups were actually the first people to permanently settle the valley floor (Fredrickson 1973; Gerow and Force 1968; Kroeber 1925; Whistler 1977). The



archaeological record for the valley portions of Yuba County, which to date has been little studied, probably reflects a local variation on the three horizon sequence that characterizes most of central California.

Some archaeological evidence, particularly in the southern San Joaquin Valley and in the North Coast Ranges in the vicinity of Clear Lake, indicates the sporadic presence of small, mobile bands of people in the Valley as early as 12,000 years ago. These ancient peoples appear to have adapted to exploiting resources associated with glacial lakes and their surroundings. Around the same period, human groups also occupied lakeside environments in the Great Basin. This "lacustrine" (i.e., lakeside) adaptation, first described by the archaeologist Bedwell (1970), has become known to archaeologists as the "Western Pluvial Lakes Tradition." During this period, reliably dated archaeological sites appeared in many areas of North America that are characterized by so-called "Clovis" projectile points, which are large, fluted points made of flints that were used to kill big game, including mammoths, giant bison, and other, now-extinct animals. Those California sites that are believed to be of similar age have been tentatively dated to this period by implication based on the presence of Clovis-like projectile points (Fredrickson 1973; Riddell and Olsen 1969). There is more secure evidence of slightly less ancient human presence in portions of California as a result of radiocarbon dating. Peak and Crew (1990) reported radiocarbon evidence that a site in the central Sierra Nevada Mountains within Calaveras County was occupied nearly 10,000 years ago. Fredrickson and Grossman (1966, 1977) established an age of about 8,000 years for sites in the southern San Joaquin Valley based on radiocarbon analysis.

There is no reason to believe that Yuba County was not visited by human societies as early as 10,000 to 12,000 years ago, but firm evidence has not yet appeared. It is likely, however, that permanent, year-round occupation of the valley floor in Yuba County began no earlier than the Early Horizon.

15.1.1.2 Sierra Nevada Foothills and Mountains

The first noteworthy attempt to synthesize northern and central Sierran prehistory resulted from surveys conducted in the Tahoe Basin and



surrounding tracts by Heizer and Elsasser (1953). They identified and named two distinct archaeological expressions, the Kings Beach Complex and the older Martis Complex.

The Kings Beach Complex appeared in the Sierra Nevada around A.D. 500 and was apparently confined to the eastern side of the crest. Many archaeologists have recognized this complex as a direct ancestor of Washo Indian culture. Because this is an eastern Sierran culture, it does not appear in Yuba County.

The Martis Complex is now thought to date from about 2000 B.C. or earlier to A.D. 500. It tentatively has been divided into three temporal phases based on the appearance and disappearance of recognizable projectile point types. According to some archaeologists, the Martis people relied almost exclusively on basalt for chipped stone technology. Other Martis Complex traits include the mano and metate used for grinding seeds into flour, possibly the cylindrical pestle and bowl mortar (presumably used for pounding acorns into meal), and a variety of scrapers, drills and punches. The Martis people had not apparently employed the bow and arrow (Elston et al. 1977; Heizer and Elsasser 1953). Until relatively recently, most archaeologists who have conducted research in this region felt that the Martis Complex inhabited the mountains on both sides of the northern Sierra Nevada.

A somewhat different prehistoric cultural sequence has been inferred from archaeological excavations in two northern Sierran foothill localities. In the Oroville Locality, a five-phase sequence was indicated. The most recent phase is called the Historic Complex, which clearly represents the Northwestern Maidu Indians, who occupied much of the foothill region of modern Butte County when Europeans and Americans arrived. The Oroville Complex dates to the protohistoric period from about A.D. 1830 back to around 1500. The Sweetwater Complex predated the Oroville Complex from about A.D. 800 to 1500. The Bidwell Complex dated from about A.D. 1 to 800. Preceding the Bidwell Complex is the somewhat enigmatic Mesilla Complex (Markley 1978; Olsen and Riddell 1963; Ritter 1970).

Humphreys (1969) described a three-phase sequence for the Bullards Bar area located about 12 miles north of Grass Valley and Nevada



City in what was formerly Nisenan (i.e., Southern Maidu) Indian territory. Bullards Bar I represents the earliest phase, and seems equivalent in age and character to the Martis and Mesilla Complexes. Bullards Bar II, dated roughly between A.D. 500 and 1400-1500, seems to be somewhat equivalent to the Sweetwater Complex of the Oroville Locality. Bullards Bar III is the most recent expression, and is presumed to represent ancestral Nisenan culture.

The Mesilla Complex has been compared to the Martis Complex based on similarities in lithic technology. However, Olsen and Riddell (1963:11) identified sufficient differences between the Mesilla and Martis Complexes to indicate two distinct cultures.

Some archaeologists agree that there appears to be an unbroken cultural sequence for at least the last 2,000 years in the Oroville Locality. This suggests that all four of the post-Mesilla Complex phases might be ancestral to the Maidu or a closely related cultural group.

Farber (1982a, 1982b) felt that the cultures that occupied the eastern and western slopes of the northern Sierra Nevada were always distinct, not only during the post-Martis Complex period, but throughout the earlier Martis/Mesilla period as well. His research indicated that the Martis Complex, as it has been described in the Tahoe Basin region, did not exist west of the Sierran crest. He felt that the culture(s) of this period seemed clearly related to Central California cultures of similar age. He concluded that the Mesilla Complex, and not the Martis Complex, occupied the mountains of eastern Yuba County and the western slopes of the northern Sierra Nevada in general. He additionally hypothesized that the Mesilla Complex most likely represents the remains of a group or groups of people with Penutian linguistic affiliations, possibly, but not necessarily, Maiduan. The implications of these theories are that the Maiduan-speakers occupied the region far longer than had previously been thought and that they arrived via the Central Valley rather than the Great Basin, where the Martis people are believed to have originated. Recent excavations of western Sierran sites have generated some apparent support for many of these ideas (cf., Clewlow et al. 1984; Elston et al. 1984; Peak and Associates 1983).



Many archaeologists have reported evidence for what appear to be pre-Martis/Mesilla human presence in the northern Sierra Nevada. Although this evidence is thus far inconclusive, somewhat more convincing evidence has recently been presented for human occupation of the central Sierra Nevada 10,000 years ago or earlier (Peak and Crew 1990).

The prehistory of the valley, foothill, and mountain regions of Yuba County culminated in Nisenan Indian culture. However, no progress has been made toward reconciling the archaeological records of the three regions. In fact, other than Farber's attempts to unify the prehistory of the foothill and mountain regions and relate these areas superficially to cultural trends of the Central Valley, few archaeologists have addressed the subject.

15.1.2 Ethnographic Background

The Indians who claimed most of what is now Yuba County were the Nisenan or Southern Maidu. As their name implies, they spoke a Maiduan language of the California Penutian linguistic stock. Other Maiduan languages and dialects were spoken by the Konkow, or Northwestern Maidu, who occupied the Butte Creek and lower Feather River drainages in much of present-day Butte County, and the Northeastern or Mountain Maidu who claimed the upper Feather River basin that now coincides largely with modern Plumas County. The northeastern tip of Yuba County may have been occupied or claimed by either Nisenan or Northeastern Maidu.

Valley and Hill Nisenan groups were culturally, linguistically, and presumably ethnically related, but the valley people tended to interact socially and economically more with non-Nisenan valley peoples, such as the Patwin who lived on the western side of the Sacramento Valley, than with the Hill Nisenan. Similarly, Hill Nisenan peoples were more likely to have close relations with surrounding non-Nisenan hill and mountain peoples, including the Konkow, Mountain Maidu, Washo, and Sierra Miwok.

Valley Nisenan villages were generally distributed along the margins of primary watercourses. Few villages occupied the valley plain between the Sacramento River and the foothills, although the valley people hunted and gathered there. The valley-dwelling Nisenan were heavily dependent on fish



and acorns for subsistence. Eels and salmon were caught in immense quantities in the larger watercourses. The Nisenan were able to transform huge seasonal surpluses of salmon into a reliable year-round staple by drying the fish and pounding it into a meal that could be preserved for at least a year. Similarly, acorn meal was processed and preserved for later use. Hunting and the gathering of a vast variety of vegetable foods were important subsistence pursuits that supplemented fishing and acorn gathering.

Hill and mountain Nisenan villages were located on ridges adjacent to streams or on flats along the rivers. These villages were generally smaller than those of the valley people, and during certain periods of the year, many families lived away from their main villages while they were engaged in subsistence activities. Most villages had bedrock mortar sites associated with them. The Hill Nisenan probably depended relatively less on fishing and more on hunting than their valley counterparts. What was not available to them in their country they obtained through trade (Wilson and Towne 1978).

Like most native California cultures, the Nisenan were organized into sociopolitical units called tribelets. A tribelet, or "village community," consisted of the inhabitants of two or more politically confederated villages united under the leadership of the head man of the most prominent village. Each tribelet acted as a homogeneous sociopolitical unit in matters of land ownership, reaction to trespass, war, and ceremonies. The head man was often assisted in his office by lesser officials and a council of elders. Most tribelet leaders "ruled" by virtue of their wisdom, experience, and acquired respect rather than through any real authority. Tribelets were distinguished on the basis of location, minor variations in dialect, and internally perceived sociopolitical differentiation (Kroeber 1932:258).

A tribelet differs from a true tribe in one important respect. Members of a tribe consider their affiliation to the tribe to be permanent. A tribe has a formal name and territory, and the territory and social makeup of the tribe do not change. Tribelets, on the other hand, are arbitrary social and political units. Villages could, and probably did, realign themselves into new confederations, so that over time, the territory and population of a tribelet could undergo considerable change. Tribelets of central California Indian groups rarely had formal names. People of a tribelet merely referred to themselves in terms of locality. For example, they might call themselves "the people east of the river" or "the ridge people." Members of the various



Nisenan tribelets never considered themselves to be members of the Nisenan "tribe." In fact, some Nisenan tribelets on opposite ends of the vast territory in which Nisenan dialects were spoken may well have been unaware of each other's existence.

Even before large-scale white settlement occurred in Nisenan territory around the time of the Gold Rush, the Valley Nisenan were decimated by what is thought to have been a malaria epidemic brought to the Sacramento Valley by white trappers from Oregon in 1833. As many as 75% of some Central Valley Indian groups perished in the plague (Cook 1955). Beginning about 1850, surviving Nisenan were subjected to murder, enslavement, forced relocation, and other deprivations. Those few Nisenan who survive today face high unemployment, poor housing and education, and many other disadvantages. They continue to struggle to maintain vestiges of their language and culture.

15.1.3 Historical Background

In 1769, the Spanish government sent Father Junipero Serra into Alta California, as the future state was then known, to establish missions among the Indians. As one historian recently remarked, the recently beatified Serra and his contemporaries would probably be horrified to learn that many people now consider their actions to be genocide. However, the California Indian population plummeted during the mission period and their lands came under Spanish ownership (Hoover et. al. 1990:xii). Seeking more native souls to replace those in the coastal areas who had died under their rule, the Spanish began to explore the Central Valley.

Spanish explorers were the first Europeans to visit Yuba County. In 1808, an expedition was led into the interior by Gabriel Moraga. This expedition reached the lower Feather River, probably as far north as its confluence with the Yuba River. In May 1817, an expedition led by Father Narciso Durán, accompanied by another relatively well-known Spanish explorer, Luís Argüello, made a voyage by boat up the Sacramento River, probably as far north as the confluence with the Feather River. In an 1821 expedition led by Argüello, the last expedition sent by the Spanish government into the Central Valley, the Feather River was named. This expedition crossed portions of the future Yuba County, and it is believed that it went as far north as present-day Tehama County (Hoover et al. 1990:492, 495, 538).



In 1822, Mexico became independent of Spain, and California, then a Spanish colony, came under Mexican rule, with Luís Argüello as governor. By the late 1820s and throughout the 1830s, Hudson's Bay Company and American Fur Company trapping and exploration parties followed. John C. Frémont's famous expedition explored Yuba County in 1846. British and American explorers were allowed by the Mexican government to become citizens of the republic, which gave them the privilege of land ownership. Thus, many of these men obtained large tracts of land granted to them by Mexico. These men, including John Bidwell and John Sutter, tended to dominate the business and commercial affairs of what was to become the State of California (Hoover et al. 1990:xiii, 492, 538).

White settlement of the area around Marysville began around 1841, when John Sutter established a huge domain consisting of Mexican land grants that included much of what is now Yuba County. His holdings were far greater than Mexican law permitted. He therefore sublet parts of his estate to other settlers. In 1842, Sutter leased to Theodore Cordua lands that were to become Marysville. Charles Covillaud, a Frenchman who was formerly employed by Cordua, purchased a half share in Cordua's property in 1848, and a wave of development and emigration soon occurred as a result of the Gold Rush. A town was laid out in 1850 that was named Marysville in honor of Covillaud's wife, Mary Murphy Covillaud, who had survived the Donner party disaster. Marysville soon became the head of navigation on the Feather River and an important commercial center for the northern mines, resulting in phenomenal growth.

The City of Wheatland also arose from a Mexican land grant. Pablo Gutiérrez, an employee of John Sutter, received a grant on the north side of Bear River in 1844. He built an adobe house at a point later named Johnson's Crossing, about three miles east of present Wheatland. After his death in 1844, Sutter auctioned his grant for \$150 to William Johnson and Sebastian Kayser. Johnson took the eastern half, Kayser the western half. They built an adobe just below the crossing, and this place became known as Johnson's Rancho. This became the first settlement reached by overland travelers who followed the California Trail through Donner Pass and down the ridge north of Bear River into the Sacramento Valley. Seven members of the tragic Donner Party sought refuge there during the winter of 1846-47 and sought aid for those still imprisoned by the snow at Donner Lake. One of these seven was Mary Murphy, whose first husband was William Johnson.



She is the woman who later married Covillaud, who named Marysville after her (Hoover et al. 1990:540).

In 1849, the U.S. government established Camp Far West about four miles east of Wheatland to protect American settlers in the Yuba region. The post was abandoned in 1852, and is now under the waters of Camp Far West Reservoir (Hoover et al. 1990:540).

It is believed by some historians that a Jonas Spect was the first person to find gold in Yuba County in June 1848 at a place later called Rose's Bar on the Yuba River. Later that year, John Rose and William J. Reynolds opened a store here to supply the miners, and by 1850, some 2,000 men were working this bar. Many such mining settlements were established along the river above Marysville with colorful names, such as Sucker Flat, Squaw Creek, Cordua, Sawmill, Lander's and Kennebec bars, Malay Camp (so-named for its Malaysian occupants), Parks' Bar, Sicard Flat, Swiss Bar, Chimney Hill, and Owsley's Bar (Hoover et al. 1990:540-541).

These places now lie buried beneath at least 70 feet of debris deposited in the river by immense hydraulic mining operations in the higher mountains. Hydraulic mining began in California as early as 1853, and by 1857, it reached huge proportions in the Sierra Nevada. Finally curtailed by a court order in 1884 because of the massive environmental damage it caused, hydraulic mining debris literally buried the settlements along the Yuba River and necessitated high levees along the Feather and Sacramento rivers to contain their waters as their channels filled in with silt. The many booming mining towns of the Yuba River country are now remembered only as names for school districts and townships, such as Sicard Flat School District and Rose Bar Township. The City of Marysville, which once overlooked the Feather River, is now below the riverbed; the river is held back by levees (Hoover et al. 1990:xiv, 538-541).

Yuba County was among the 27 original California counties established in 1850. Nevada and Sierra counties were then part of the original Yuba County. There are two versions of the naming of Yuba County. One is that the Moraga expedition of 1808 named Yuba River *Río de las Uvas*, "River of the Grapes," for the wild grapes growing along its banks. "Yuba" is an Anglicized pronunciation of *Uva*. A second theory is that Yu-ba was the name of a Nisenan village near the junction of the Feather and Yuba rivers



(Hoover et al. 1990:538). In fact, a village called *Yupu* was recorded by anthropologists at this location (Wilson and Towne 1978:Figure 1).

Many of the small, rural communities of Yuba County had their beginnings as gold camps. Smartsville was the center of a gold mining district named for James Smart, who erected a hotel there in 1856. Extensive hydraulic mining was carried out in its environs between 1855 and 1877. Reportedly, about \$13 million in gold was removed from this district. The post office has always been named "Smartville" (Clark 1970:120; Gudde and Gudde 1975:323; Hoover et al. 1990:541-542). Similarly, Dobbins, Brownsville, Browns Valley, Camptonville, and other Yuba County towns had their beginnings in the Gold Rush (Clark 1970; Hoover et al. 1990).

One historical event in Yuba County occurred near Wheatland in 1913. The Durst Ranch, east of Wheatland, began cultivating hops in 1874; by 1913 it was a major producer. Ralph Durst, one of California's largest employers of migratory farm laborers, advertised for help. Nearly 2,800 men, women, and children who showed up on August 1, 1913, found that there were many more people than jobs. The pay was low, the company store gouged the workers for food and supplies, and the housing and sanitation conditions were very poor. In response to this situation, the Industrial Workers of the World (I.W.W.) organized a strike, which led to a riot in which the sheriff, the district attorney, and two workers were killed. The organizers of the strike were convicted of murder and sentenced to life imprisonment. In the wake of this tragedy, the governor created a commission to investigate the condition of migratory farm laborers, and some reform legislation was passed. However, no real improvements occurred, and the influence of the I.W.W. in the Central Valley waned. Later in 1913, as a direct result of the "Wheatland Riot," Charles Kelley led a group of unemployed farm workers on a march to Sacramento, which was disbanded by the police (Hoover et al. 1990:545).

15.2 EXISTING CULTURAL RESOURCES CONDITIONS

The following information was compiled by the California Archaeological Inventory, North Central Information Center, California State University, Sacramento. The Information Center is one of 11 such archives in various regions of California, which house archaeological site records and site locations maps along with other cultural resources registry information. The California Archaeological



Inventory is operated under the auspices of the State Office of Historic Preservation (OHP).

15.2.1 Survey Coverage

Archaeological and historical sites, features, and artifacts are discovered, identified, and inventoried through a process of systematic archaeological survey. In an archaeological survey, qualified archaeologists traverse land, preferably by means of parallel, evenly-spaced sweeps (called "transects") until the entire subject property has been systematically inspected for evidence of cultural resources. The intensity of coverage is proportional to the distance between transects. On land perceived by the archaeologists to be highly sensitive with respect to the presence of cultural resources, transects are often spaced as close as five to ten meters apart, while on lands having low archaeological potential, less intensive coverage may be indicated in which the distance between transects is as much as 30 to 50 meters. Based on terrain, ground surface visibility, vegetation density and other factors, the archaeologists adjust the intensity of coverage to fit the prevailing conditions. The objective is to design a survey strategy that affords a high probability that all cultural resources within the subject property will be encountered and inventoried. In reality, budget and staffing constraints are often factored into the design of a survey strategy.

When cultural resources are encountered in an archaeological survey, they are located precisely on U.S. Geological Survey (USGS) topographic maps, photographed, mapped to scale, and recorded on standard State of California Archaeological Site Record forms. The OHP published guidelines and standards for site recording in its *Handbook for Completing an Archaeological Site Record* (OHP 1989). The *Handbook* will soon be updated.

Yuba County is represented on 21 USGS 7.5' topographic base maps. The Information Center has complete sets of maps on which the areas surveyed by qualified archaeologists are shaded. Another complete set of topographic maps shows the locations of recorded cultural resources. These resources are assigned numbers by the Information Center. The trinomial (i.e., three-part) site numbers reveal the state, county, and a sequential site number within the county. For example, site CA-Yub-57 is the number assigned to the 57th cultural resource recorded on Information Center maps for Yuba County.



Information Center records revealed that approximately 124 archaeological surveys have been undertaken to date in Yuba County, each resulting in a technical report filed with the Information Center. Forty of these reports have been processed; the area that each survey covered has been marked on the appropriate USGS base map, and the locations of cultural resources recorded as a result of these surveys have been recorded on another set of base maps. The other 84 survey reports for Yuba County are presently backlogged; the information they contain has not yet been processed and recorded on maps.

The area covered by the 124 surveys, including those yet to be processed, is estimated at about 78,000 acres, although not all of this acreage was necessarily intensively covered. Some surveys of very large tracts of land only receive cursory coverage or sample only selected portions of the property, usually as a preliminary procedure to evaluate archaeological sensitivity or due to budget constraints. It was roughly estimated by Information Center staff that these surveys represent about 18 percent of the total Yuba County area.

It must be understood that much of the data on file at the Information Center does not include surveys conducted on federally administered lands within Yuba County on the Tahoe and Plumas National Forests, which together occupy about 56,000 acres of land within the County. Some Archaeological Reconnaissance Reports (ARRs), as they are referred to by the U.S. Forest Service, and most or all site records have been filed with the Information Center by the Tahoe National Forest (Donna Day, Assistant Forest Archaeologist, Tahoe National Forest, pers. comm., September 1992; Marianne Russo, Coordinator, California Archaeological Inventory, North Central Information Center, California State University, Sacramento, pers. comm., September 1992); very little data have been received from the Plumas National Forest for those areas of the Forest that occupy Yuba County. The Forest Service was contacted separately in an attempt to obtain more specific cultural resource data for federal lands in Yuba County.

Large tracts of the National Forests have been surveyed by Forest Service archaeologists or archaeological consultants who have contracted with the Forest Service as part of the environmental planning process for timber harvests and other undertakings within National Forest boundaries. Given the high sensitivity of National Forest lands within Yuba County, where there was



not only intensive Indian occupation, but also extensive evidence of Gold Rush activity, there are undoubtedly hundreds of recorded sites and many more unrecorded sites within the county on federal lands that are not on file in Information Center archives. Plumas National Forest Archaeologist, Kevin McCormick (pers. comm., September 1992), indicated that approximately 40 percent of Plumas National Forest lands have been subjected to archaeological surveys. Donna Day (pers. comm., September 1992) estimated that about one-third of Tahoe National Forest lands have been surveyed.

15.2.2 Site Records

Information Center files reveal that 1,200 sites have been processed and were assigned trinomials in Yuba County. An estimated 300 additional site records are in the backlog of unprocessed material. Thus, an estimated total of 1,500 recorded sites exists in Yuba County (keeping in mind that this does not include hundreds of sites that are likely to have been recorded on the Plumas National Forest and possibly some sites on the Tahoe National Forest). This estimate, derived from a very rapid skimming of the records, is to be considered approximate.

The quick check of site records at the Information Center reveals the following information:

Prehistoric Resources: 784 with trinomials; an estimated 190 in backlog; 29 sites indicated on Information Center base maps for which there are no site records; more than 20 isolated prehistoric artifacts or features.

Of these prehistoric cultural resources, 204 are midden sites,¹ 647 are bedrock mortars (BRMs),² 107 are recorded as lithic scatters,³ and 16

¹ *Midden* is soil that was altered by human activity. Midden is typically dark and has a high content of organic material, animal bone, animal fat, charcoal, ash, chipped stone implements and chipping waste along with other artifacts. A midden develops from hundreds or thousands of years of intensive human presence, and thus midden sites are generally thought to represent sites of occupation (i.e., villages that were occupied year-round or seasonally re-occupied each year).

² *Bedrock mortars* are cylindrical or conical depressions ground into bedrock for the purpose of grinding foodstuffs, including acorns, pine nuts, and dried fish, into a meal or powder. Grinding is accomplished with a cylindrical stone or wood pestle. Most Native Californian villages had BRMs



are designated as "other," among which are several rockshelters⁴ and three large petroglyph⁵ sites.

Historic Resources: 446 with trinomials; 136 in backlog; seven indicated on site maps for which there are no site records, and sixty or more isolated artifacts or features.

Of the historic resources, 37 are cemeteries (including known Indian cemeteries), 19 are habitation sites (i.e., mostly individual cabins or ranch/farm houses), 168 sites relate to mining (and may include habitation features, mining features, tailings, etc.), 10 historic roads or trails, 42 ditches or flumes, 63 walls or fences, 46 hydroelectric or miscellaneous, 10 military sites or features, and 12 "other."

Tahoe National Forest: Much, but not all, of the Tahoe National Forest land that occupies Yuba County is within the Downieville Ranger District. Roughly half of this District occupies Yuba County, while the other half is in Sierra County. There are 613 recorded sites in the Downieville Ranger District, and roughly half of these (about 300) are assumed to lie within Yuba County. Among the estimated 300 recorded sites in the Yuba County portion of the District, it is thought more than half of them are prehistoric,

associated with them, but thousands of other BRMs were scattered throughout the state that appear to be unassociated with village sites. These isolated BRMs were probably located in or near oak groves where acorns were gathered. By processing the acorns where they were harvested, their weight and bulk could be reduced for transport to the village.

³ *Lithic scatters* are prehistoric sites on which the cultural remains are distributed primarily on the surface and consist almost exclusively of chipping waste or "debitage" produced during the manufacture of stone implements. These sites may represent temporary camps where hunters produced or re-sharpened stone tools and weapons in the evening before or after a hunt. Their exact significance is not yet fully understood, but their sheer numbers indicate that they represent an important aspect of Native Californian lifeways.

⁴ *Rockshelters* are sites that were occupied beneath overhanging rock ledges. Such overhanging ledges are common in the Sierran foothills where layers of basalt lava flows exist. Softer material under these layers often erodes away, leaving an overhang that is often large enough to provide temporary shelter for small groups of people.

⁵ *Petroglyphs* are rock panels where prehistoric peoples created graffiti and/or works of art by pecking into the rock or painting the panels with various mineral pigments.



particularly in the vicinity of New Bullards Bar Reservoir (Donna Day, Assistant Forest Archaeologist, Tahoe National Forest, pers. comm., September 1992).

Plumas National Forest: The LaPorte Ranger District is the only District of Plumas National Forest that occupies portions of Yuba County. Portions of this District also span Sierra, Plumas, and Butte counties. According to Forest Archaeologist, Kevin McCormick (pers. comm., September 1992), there are 430 recorded sites in the Yuba County portion of the Plumas National Forest, of which about 35 are historic. Over 3,500 cultural resources have been recorded on the entire Plumas National Forest.

15.2.3 Archaeological Sensitivity

Given the Information Center estimate of 1,200 cultural resources recorded as a result of the survey of an estimated 18 percent of the total land area of Yuba County, and considering estimates for the National Forest lands within the county, an attempt was made to mathematically estimate the total number of cultural resources likely to exist in the county. Before stating that estimate, it is important to point out some of the many factors that could affect such an estimate. First, it must be assumed that many historic activities and land use patterns, especially mining, agriculture, flood control, and urban development, have obliterated hundreds or thousands of prehistoric cultural sites. The estimate assumes that the current database represents sites discovered by means of systematic, intensive survey methods, which was probably not the case, and that sites are more or less evenly distributed throughout the county, which is also unlikely; there are probably fewer sites in the highest elevations. Also, many of those sites that have been recorded no longer exist, since they were discovered during surveys that preceded timber harvests, construction projects, and other undertakings that were likely to affect the sites. Finally, many cultural sites and features are simply not recorded by archaeologists when they are encountered, and some resources are probably missed altogether during archaeological surveys. Sites and features that are often left unrecorded by some archaeologists include stone walls and fences, trails, roads, ditches (particularly earthen ditches associated with mining), tailings and other mining debris, developed springs and wells. Standing structures are also often ignored, unless they appear to be "old." With these factors in mind, it is roughly estimated that there are approximately 8,650 cultural sites in Yuba County, of which about 1,930 have been recorded.



Information Center data indicate that, like many other areas of California for which there is a significant body of archaeological information, zones adjacent to creeks, rivers, and springs should always be considered to be of high archaeological sensitivity. Flat ridge tops seem to be particularly sensitive in Yuba County for prehistoric resources, usually in the moderate to high sensitivity range depending on other cultural and environmental factors.

Where historic records indicate mining districts, townsites, and old roads or trails, high sensitivity with respect to historic cultural resources should be assumed. In fact, in the Mother Lode country generally, cultural sites and features that date to the Gold Rush are ubiquitous. Especially pervasive in these areas are ditches and other water works, tailings, "glory holes," mineshafts, and dump sites that contain dateable fragments of bottle glass and other artifacts. Also common in forested districts is evidence of logging in the form of skid trails, logging roads, logging railroad grades, log flumes, and occasionally, antique logging equipment and machinery, such as "steam donkey" engines that were used to drag logs earlier in this century.

The Information Center staff pointed out the fact that many of the USGS topographic maps for Yuba County have a 25 foot contour interval rather than the 40 foot contour interval that characterizes topographic maps for other areas of the state. This causes the steepness of the topography to appear more extreme than it actually is if one is accustomed to maps with a 40 foot contour interval. Thus, there are large numbers of recorded sites in areas that, at a casual glance of a topographic map, may appear to be of low sensitivity due to steepness. These areas are at least moderately sensitive, and therefore merit more than minimal attention. Archaeologists and planning personnel who work in Yuba County should be aware of this situation, so as not to dismiss large areas of the county as being of low sensitivity.

The review of Information Center data for Yuba County revealed a very high sensitivity for prehistoric cultural resources in the lower foothill zones. There is what appears to be an inordinately high concentration of sites as compared to other areas of the state. There are at least two factors that may explain this apparent pattern. It is possible that it appears that there is an unusually high proportion of sites merely because there is more data for this area than for comparable regions in other counties. Alternatively, it is possible that there were relatively unique environmental conditions in the Yuba County foothill region that were highly conducive to the way of life practiced by the



Indians who lived here. In support of the latter theory, archaeologists have long been aware that the foothill zones surrounding the California Central Valley have a relatively higher productivity of many resources than the adjacent valley floor and higher mountains (cf., Heizer and Elsasser 1980). More specifically, it has been noted that the economy of the Hill Nisenan – the people who inhabited the Yuba County foothills – was so diversified, the means of resource exploitation so effective, and the carrying capacity so relatively high, that Hill Nisenan territory was among the most densely populated in prehistoric California (Baumhoff 1963:174). Apparently, this is now reflected in the archaeological record.

15.2.4 Historical Inventories

Aside from prehistoric and historic archaeological sites that have been recorded during archaeological surveys, there are other publications or repositories that compile information on historical sites. Information from these sources that pertains to Yuba County is presented below. The total number of historical resources in the county that can be gleaned from these sources is not precisely known, since many of these resources appear in more than one such source.

National Register of Historic Places: There are eight historical properties on the National Register of Historic Places that are in Yuba County. Eight additional sites have been determined eligible for the National Register.

The eight Yuba County properties on the National Register are:

- Bok Kai Temple, Marysville
- Hart Building, Marysville
- Oregon Creek Covered Bridge, North San Juan vicinity
- Packard Library, Marysville
- José Manuel Ramirez House, Marysville
- U.S. Post Office, 407 C Street, Marysville
- Woodleaf Hotel, Woodleaf
- Johnson Ranch and Burtis Hotel Sites, Wheatland vicinity

The eight Yuba County properties determined eligible for the National Register include:



Archaeological Site CA-Yub-1157
Archaeological Site CA-Yub-1161
Bridge No. 16C-6 on Waldo Road over Dry Creek, Wheatland
Hadley Building, Marysville
Honcut Creek Bridge on Honcut Road west of Honcut
Rouze Store/Post Office, Rackerby
Rackerby Stage Stop
Parks Bar Bridge No 16-11 over Yuba River, Smartville vicinity

State Historic Landmarks: Yuba County has six California Historic Landmarks, including:

Timbuctoo, one mile west of Smartville
Community of Smartville
Johnson's Ranch
Overland Emigrant Trail
Bok Kai Temple
Temporary Detention Camps for Japanese Americans—Marysville
Assembly Center, Yuba County Fairgrounds, Marysville

California Points of Historic Interest: There are 12 such properties in Yuba County, including:

Bok Kai Temple
Falck House, Woodleaf
Woodleaf Hotel
Marysville Cemetery
Johnson's Crossing
Camp Far West Cemetery
Grace Episcopal Church, Wheatland
Muck Home, Wheatland
Masonic Temple, Wheatland
Ellis House, Marysville
Chinese Cemetery and Funeral Pyre, Wheatland vicinity
Church of the Immaculate Conception, Smartville

California Inventory of Historic Resources: Twenty-five Yuba County sites appear on this Inventory, including:



Bok Kai Temple
Camp Far West Cemetery
Crane's Sharon Valley Mill, Brownsville
Durst House, Wheatland
Ellis House, Marysville
Falck House, Woodleaf
Foss Cemetery, Brownsville
Freeman's (Oregon Creek) Covered Bridge, North San Juan vicinity
Grace Episcopal Church, Wheatland
Greenville, Brownsville vicinity
House next to Bok Kai Temple at 7 D Street, Marysville
Johnson's Crossing
Johnson's Ranch
Marysville Cemetery
Mary Mason Memorial Museum, Marysville
Masonic Temple, Wheatland
Muck Home, Wheatland
New York House, Brownsville
New York Ranchero, Brownsville
Lester A. Pelton Monument, Camptonville
Smartville
Strawberry Valley Cemetery
Timbuctoo
Water Tower Building, Marysville
Woodleaf Hotel

Caltrans Bridge Survey: Eighty bridges in the county were evaluated to determine their eligibility for the National Register of Historic Places. One is now on the National Register, one has been determined eligible, two are of indeterminable status, and the remainder "appear to not meet the criteria for listing." The bridge listed on the National Register, the Oregon Creek Covered Bridge, is listed above under the heading "National Register of Historic Places."

Gold Districts: Seven Gold Districts were recognized in Yuba County, including Camptonville, Browns Valley, Brownsville, Dobbins, Hammonton, Smartville, and Wheatland. Four others may extend into portions of the county, including Brandy City, Clipper Mills, Indian Hill, and Forbestown



(Clark 1970). Portions of the county that lie within Gold Districts should be considered as having high sensitivity with respect to historical resources.

Gold Camps: There are 237 place names in Yuba County associated with gold mining (Gudde and Gudde 1975).

Early Maps of Yuba County: County maps were commissioned by Yuba County in 1851, 1852, and 1854.

Overland Emigrant Trail: Camp Far West at Johnson's Rancho near Wheatland was the end of the California branch of the Oregon-California Trail that went through Donner Pass.

Historic Properties Inventory: This inventory, maintained by the OHP, primarily lists standing structures, which are often ignored by archaeologists in their survey reports. The Inventory is now stored on an electronic database. By about the beginning of 1993, the Inventory will be transferred to each of the Information Centers where it will be easily available to archaeologists who conduct records searches prior to surveys. As of May 28, 1992, there were 328 properties in Yuba County that have been listed on the Inventory. The majority of these are in Marysville. Along with listings in the Inventory, there is a record in the database for each property. Included in the records are the name and address of the property, along with the Inventory number. The date of construction, architect, builder, historic attributes, and a determination of eligibility for the National Register also are included. A listing of the 328 Yuba County structures on the State's Historic Properties Inventory appears in Appendix D.

15.3 REGULATORY CONTEXT

Only relatively recently has a large proportion of the public become aware that cultural resources are protected by law. The recent arrest, prosecution, and sentencing of two individuals in Tehama County for vandalizing archaeological sites and selling artifacts was a landmark case that helped raise the public consciousness regarding this issue. This case marked the first time that people apprehended on public lands in the United States while vandalizing archaeological sites have been charged with felonies and successfully prosecuted under the Archaeological Resources Protection Act of 1979. The individuals were sentenced to prison terms and fines and were required to surrender a four-wheel drive vehicle and excavation



equipment used during the crime along with immense collections of illegally collected artifacts and human remains. Public education about this problem has also been enhanced by a televised campaign during the last several years sponsored by the National Parks Service.

Legal protection of archaeological sites is necessary to preserve the scientific, historical, cultural, religious, educational, recreational, and aesthetic values embodied in cultural resources. Many well-meaning and otherwise law-abiding citizens have indulged in the excavation of archaeological sites and removal of artifacts and human remains from them as a recreational activity. This activity, often called "pot-hunting" by archaeologists and regarded by Native Americans as grave robbery, has greatly diminished the ability of archaeologists to reconstruct the 12,000 or more years of human history in California. Any disturbance of archaeological sites that results in the excavation of cultural deposits or the displacement or removal of artifacts from sites destroys most or all of the scientific value; cultural materials must be encountered by archaeologists in their original context in order to provide reliable scientific information. Artifacts alone are of little research value if their depositional context is unknown or unsubstantiated.

The need for laws to preserve the scientific and other values of cultural resources has long been recognized by our elected officials at the local, state, and federal levels. Aside from preservation of these values, the laws governing treatment of cultural resources also recognize that these resources are finite; there are only so many of them left, no new sites representing traditional Native American culture are being formed, and many of those that remain have already been disturbed or are disappearing in the face of development. Finally, these laws have been formulated with the understanding that our cultural heritage is shared equally by all Americans; cultural resources belong to the Public Trust.

The first comprehensive legislation that was promulgated with the intent of providing protection of cultural resources on federal lands was the Antiquities Act of 1906 (16 USC 431). A comprehensive national policy for preservation of the cultural environment was provided by the National Historic Preservation Act of 1966 (16 USC 470). This act established a National Register of Historic Places as well as eligibility criteria for the National Register. It also established procedures for avoiding or mitigating damage to cultural resources as a result of federal undertakings. The National Environmental Policy Act (NEPA) of 1969 (16 USC 4321), the landmark legislation that served as a model for the California Environmental Quality Act (CEQA), declared that it is the policy of the federal



government to preserve important historical and cultural properties that represent our national heritage. NEPA requires consideration of adverse impacts to cultural resources in the planning process for federal projects or privately initiated undertakings on federal lands or that require federal licensing, permits, or funding. Executive Order 11593 (1971), signed by President Nixon, strengthened these acts by requiring federal agencies to assume a leadership role in "preserving, restoring, and maintaining the historic and cultural environment of the nation." As a result of this Executive Order, states appointed State Historic Preservation Officers (SHPOs), with whom federal agencies were compelled to consult regarding the effects of federal undertakings on cultural resources in the 50 states. Also as a result of the Executive Order, many or most states adopted legislation to protect cultural resources on state-administered and privately-owned lands. Other federal legislation includes the Archaeological Resources Protection Act, which among other provisions, specifies minimum qualifications for archaeologists who conduct cultural resources investigations on federal lands.

Appendix G to the CEQA Guidelines (item "j") states that "a project will normally have a significant effect on the environment if it will disrupt or adversely affect a prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group...except as a part of a scientific study." Appendix K to the CEQA Guidelines prescribes guidance for mitigating archaeological impacts and establishes criteria for evaluating the significance of archaeological resources. Under these criteria, an "important archaeological resource" is one that:

- A. Is associated with an event or person of recognized significance in California or American History or recognized scientific importance in prehistory
- B. Can provide information which is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable archaeological research questions
- C. Has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind
- D. Is at least 100 years old and possesses substantial stratigraphic integrity (i.e., it is essentially undisturbed and intact)



- E. Involves important research questions that historical research has shown can be answered only with archaeological methods

In addition to CEQA criteria, the significance of archaeological and historical sites is often evaluated against eligibility criteria of the National Register of Historic Places (NRHP). These criteria are summarized below:

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of State and local importance that possess integrity of location, design, setting, materials, workmanship, feeling and association and:

1. That are associated with events that have made a significant contribution to the broad patterns of our history, or
2. That are associated with the lives of persons significant in our past, or
3. That embody the distinctive characteristics of a type, period, or method of construction, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction, or
4. That have yielded or may be likely to yield information important in prehistory or history

These State and federal guidelines imply that archaeological significance is measured primarily in terms of the historical or archaeological research value of the resource. However, both State and federal regulations and guidelines acknowledge that, aside from archaeological and historical values, cultural resources can be significant for their cultural or religious values (e.g., cemeteries and sacred places). The federal Native American Religious Freedom Act of 1979 provides protection for sites of Native American sacred significance. State laws promulgated under SB 297 (Garamendi 1982) prescribe specific treatment for Native American human remains discovered during archaeological investigations or through excavation associated with development.

Specifically, under SB 297, the county coroner must be notified immediately upon discovery. The coroner will determine whether the remains are archaeological in nature. If they are found to be archaeological, the California Native American



Heritage Commission in Sacramento must be notified. The Commission, in turn, will identify the most likely descendants of the buried individuals who are qualified to represent Native American interests. The qualified Native American representative has authority over the remains. However, negotiations are commonly held among the Native American representative, the landowner and/or project proponent, the Lead Agency, and the project archaeologist. In these negotiations, the archaeologist can seek permission from the Native American representative to conduct an emergency salvage excavation of the remains to collect scientific information, after which the remains are turned over to the Native American representative for re-burial according to Native American custom.

California has a State Office of Historic Preservation (OHP) under the supervision of the SHPO. The OHP is under the administrative authority of the California Department of Parks and Recreation. The OHP administers 11 regional Information Centers of the California Archaeological Inventory. Most of the Information Centers are located on university campuses and are staffed by archaeologists from the anthropology departments of these universities. One of the Information Centers (San Bernardino County region) is located in and operated by the County Museum under contract to the OHP. These Information Centers house records of all cultural resources recorded by archaeologists in the State of California.

Whenever a proposed project comes under CEQA environmental review, at a minimum, the Lead Agency should require an archaeological records search from the regional Information Center to determine whether there is potential for the project to adversely affect cultural resources. If indicated by results of the records search, a complete archaeological field survey should be conducted by a qualified professional archaeologist. No determination should be made at the Initial Study phase of the CEQA process that a project will have no effect on cultural resources without benefit of an archaeological investigation consisting of a records search, and if necessary, a complete archaeological survey.

15.4 CONFIDENTIALITY OF SITE RECORD DATA AND USE OF ARCHAEOLOGICAL SENSITIVITY MAPS

Because of the ongoing, severe problem of pothunting or vandalism to cultural resources, site locations are exempted from public access by the California Public Records Act (PRC 6254.10). This policy is reinforced by the OHP and the Information Centers which have strict policies regarding confidentiality of site records. In order to be granted access to data housed by the California



Archaeological Inventory, the researcher or public agency planner requesting the data must sign a confidentiality statement that reads as follows:

I, the undersigned, have been granted access to the Archaeological Site Record data at the (name of Information Center). I fully understand the confidential nature of the information contained in these records, and I agree to respect that confidentiality. I will attempt to ensure that specific site location is not distributed in public documents or made available to unauthorized individuals within my institution or agency. I also understand that prior written consent of the Information Center Coordinator or State Historic Preservation Officer is required for any exceptions to the above stipulations. I understand that failure to comply with any aspect of the above agreement is grounds for denial of subsequent access to the archaeological site data.

Additionally, those archaeologists who are on Information Center lists of qualified researchers must be certified as qualified professionals by the Society of Professional Archaeologists (SOPA). Included in the SOPA Code of Ethics, to which all qualified professional archaeologists are bound, are the following stipulations:

An archaeologist shall not:

- (a) reveal confidential information unless required by law
- (b) use confidential information to the disadvantage of the client or employer
- (c) use confidential information for the advantage of herself/himself or a third person, unless the client consents after full disclosure

Many public planning agencies have archaeological site maps or sensitivity maps for lands within their jurisdictions. Often, these maps are displayed in public places, where persons who engage in pothunting can see them. These maps are generally acquired by planning agencies for the purpose of making planning decisions regarding the disposition of cultural resources that face impacts from land use proposals.

There is a potential for both historic and prehistoric cultural resources to exist virtually anywhere, even in areas thought to be of relatively low sensitivity. There are no areas of "non-sensitivity" for cultural resources within the entire state, and certainly not in Yuba County, which is known to have a generally high sensitivity for



cultural resources. When archaeological sensitivity maps are used to make Initial Study determinations of potential effects on cultural resources, these resources can be exempted from further consideration during the CEQA process. After several years of such practice, in which neither records searches nor archaeological surveys are conducted in areas perceived to be of low sensitivity, the fact that no cultural resources are recorded in these areas reinforces the belief that no cultural resources exist. Developments approved in these areas without benefit of a cultural resources investigation may affect cultural resources that do exist.

In conclusion, the only reliable method for determining whether a project will potentially affect cultural resources, thus assuring compliance with CEQA and other regulatory provisions, is to undertake a records search, and if indicated by records search findings, a complete archaeological survey. Archaeological sensitivity maps are of limited value in the planning process. Their use can result in the release of confidential information to unauthorized artifact collectors or the inadvertent destruction of cultural resources when such maps are used to support a decision not to require a records search and archaeological survey.



SECTION SIXTEEN
AESTHETICS AND SCENIC RESOURCES



SECTION SIXTEEN

AESTHETICS AND SCENIC RESOURCES

One of the issues raised in the *General Plan Update: Issues, Opportunities, Assumptions, Vision Statement and Goals* (QUAD Consultants, October 1992:2-50) is "retention of the present charm and beauty of Yuba County..." whose "...trees, open spaces, rivers and agricultural landscape are beautiful and provide a unique aesthetic." Retaining this aesthetic will require adherence to compact patterns of growth and a strong set of General Plan policies aimed at protecting open space, trees, wetlands, and other natural features. Special protection also will be needed for the most visible viewsapes along roadways.

The issue of aesthetics is closely linked to "quality of life." The term "quality of life" does not have a precise definition. When applied to a community, it is usually understood to refer to such value-related factors as a feeling of personal safety, good schools, a sense of community, attractive housing and employment opportunities, adequate public services and facilities, scenic and visual quality, clean air and water, and the absence of such negative characteristics as traffic congestion, noise, smog, "blight," crime, and violence. While a general plan cannot create or guarantee a desirable quality of life, it can establish policies to maintain and enhance the positive qualities that already exist in Yuba County.

The cities and communities in Yuba County are still small and unchanged enough that they embody a rural, small-town atmosphere, which is regarded by many as a community asset worth preserving. The older homes and commercial buildings, particularly in Marysville and some of the foothill communities that were in the "Mother Lode" country, evoke an earlier era and atmosphere that many communities today are working hard to preserve or restore (see Section 15.3.4 for an inventory of historical structures and points of interest in Yuba County).

16.1 LOCAL REGULATIONS AND PLANNING FOR AESTHETIC RESOURCE PROTECTION

"Neo-traditional town planning," which promotes grid street systems and shopping within walking distance of homes, already exists in some Yuba County communities, particularly the older sections of Marysville and Wheatland. While the County *General Plan* does not apply inside the cities of Marysville and Wheatland,



it can include policies designed to preserve the desirable physical and design features in communities such as Brownsville, Challenge, Smartville, and Camptonville, and carry them over into new development, so that old and new development appear compatible with one another.

The *Yuba County Zoning Ordinance* already includes a Landscaping Ordinance and Sign Regulations that are intended to preserve aesthetic values. However, there is a concern in the county that the present Zoning Ordinance does not contain contemporary development design standards. New and updated development standards may be proposed in the updated *General Plan*, and Plan goals and policies that are relevant to development design standards and a design review process may propose amendments to the Zoning Ordinance to codify design standards and review procedures. As stated in the *General Plan Vision Statement* (QUAD Consultants, September 1992:5-2), prepared in conjunction with the *Yuba County General Plan Update*, design review will become an integral part of development approvals, assuring a pleasing and compatible view from public and private places. Natural open space will be preserved whenever feasible to preserve vegetation and wildlife and enhance the aesthetics of new developments.

The development review process will establish desirable and undesirable design characteristics and guidelines for community/neighborhood commercial uses, heavy commercial/light industrial uses, shopping centers, signs, landscaping, circulation and parking, site preparation, utilities and lighting, and energy conservation. The inclusion of policies in the *General Plan* will be evidence of a firm commitment by the County to the principles of good design to achieve and maintain aesthetic values. The kinds of goals typically established in community design review guidelines are:

- To encourage attractive buildings and landscaping that reflect the values of the county
- To project a positive image to the traveling public that enhances local business opportunities
- To promote architectural diversity and creative, cost effective design solutions that are compatible with the rural agricultural environment of the county

The County has the option of limiting the design review process to selected areas of the county, such as within the Spheres of Influence of Marysville and



Wheatland, in the communities of Linda and Olivehurst, in and around established foothill communities, and along scenic corridors. Alternatively, the County can apply the design review process to all new developments, including residential developments, in unincorporated Yuba County.

The *Yuba County General Plan, Open Space and Conservation Element* (County of Yuba 1973), which is currently being updated, has as its general goal, "To maintain and enhance the natural resources, open space land uses and scenic beauty of Yuba County in order to protect the quality of the environment, the County's economy, and the health and well-being of present and future residents" (emphasis added). In support of this goal is a policy to "encourage the preservation and enhancement of the natural features of the County, including rivers and streams and their banks, mountain peaks, bluffs, areas of scenic beauty, and native vegetation." The *Open Space and Conservation Element*, along with the *County of Yuba Circulation Plan* (1970), designated scenic roads and highways (see below), and has thus made a commitment to preserving their scenic values.

16.2 AREAS OF OUTSTANDING SCENIC VALUE

Yuba County is divided among three major geographic/physiographic regions: the Sacramento Valley, the Sierra Nevada foothills, and the mountain environment of the higher Sierra Nevada Mountains. Each of these regions has its own unique aesthetic qualities.

The valley portions of the county, particularly along the State Route 70 and 65 corridors, are characterized by orchards and crop lands, punctuated by urbanized areas of Marysville, Olivehurst, and Linda. Wheatland is more compact than Marysville and its suburbs, and is surrounded by agricultural lands. The Sierra Nevada, North Coast Ranges, and Sutter Buttes are visible from most Valley locations except when weather or air quality conditions reduce visibility.

The foothills are characterized by rolling terrain covered by oak woodlands interspersed with mosaic patterns of grasslands and chaparral vegetation. There are large, uninterrupted expanses of foothill countryside utilized primarily for cattle ranching. Individual ranch houses and associated barns and pastures enhance the rural visual setting. The foothill communities are generally compact and occupy attractive settings, although some blight conditions exist. These communities have thus far remained compact; preventing sprawl and reversing blight should be *General Plan* goals.



The mountainous region of Yuba County is characterized by locally steep slopes and mixed coniferous forests, which often provide spectacular scenic qualities. Population in these areas is relatively sparse and dispersed. Much of the mountainous part of the county is administered by the U.S. Forest Service, and it can be expected, therefore, that much of this scenic value will be maintained perpetually. There will, however, always be localized impacts to aesthetic values in the mountains and forests due to timber harvesting and mining operations and the effects of forest fires. With proper management (for example, avoiding timber harvesting operations directly adjacent to public roadways or leaving buffer strips of vegetation to shield newly harvested tracts from key view points), these effects can be minimized, and impacts can be mitigated by means of reforestation programs.

In each of these three physiographic regions are scenic stream corridors, including the Feather, Bear, and Yuba rivers, Honcut Creek, and their many smaller tributaries. Over 100 miles of Yuba County's borders are formed by waterways (County of Yuba 1973:10). On the upper Sierran slopes, which are steep, streams tend to run faster. In these areas, the streams have cut deep canyons, which provide spectacular scenic vistas. As these streams approach the foothills, slope moderates, and the canyons are shallower. Throughout the foothills and the valley floor, thick stands of riparian vegetation line the streams, enhancing visual quality. The streams are dammed in places for flood control, water supply, and hydroelectric projects, thus providing a network of reservoirs in the foothills and mountains. Many, though perhaps not all people, find these features visually appealing.

16.3 SCENIC HIGHWAYS

The *Circulation Plan* (County of Yuba 1970:19) designated several scenic roadway corridors and recommended their protection by special ordinances. They are listed in Section 12.1.3.

A new route associated with the long-awaited Marysville Dam and Reservoir was designated in the *Circulation Plan* as a scenic corridor. However, neither the dam nor the route have yet been constructed, nor are they now considered likely to be constructed.

The 1973 *Open Space and Conservation Element* contains a map of Scenic Highways which is at variance with the *Circulation Plan* list in Section 12.1.3.



There has been some discussion in Yuba County concerning the feasibility of designating the Yuba County portion of State Route 49 as a State Scenic Highway. The planning process can explore whether there is a strong local interest in this and whether the Yuba County portions of this highway meet State criteria. State Scenic Highway status would permit the placement of the State poppy sign; the highway would appear as a Scenic Highway in various State publications that promote tourism. An Eligible State Scenic Highway is shown on the Master Plan of State Scenic Highways. An Official State Scenic Highway is an eligible route whose scenic corridor is protected by a county-developed plan that has been found satisfactory and is adopted by the State Scenic Highway Advisory Committee. Thus, if the Yuba County portion of Highway 49 is found to be eligible and the County wishes to pursue designation, the next step would be to adopt policies that assure protection of the viewscape in the highway corridor.

The Tahoe National Forest (TNF) is implementing a plan to establish the Yuba Donner Scenic Byway. This 170 mile loop of state and interstate highways passes through the foothills, mountains, and valleys of the northern Sierra Nevada. Most of the Byway is within the TNF; the remainder passes through two State parks and private lands that encompass small, historic communities in Yuba, Nevada, Placer and Sierra counties. In Yuba County, the Byway will utilize State Route 49, passing near sites of historical interest at Camptonville and Oregon Creek. The plan also provides support for the designation of State Route 49 as a scenic highway. Representatives of Yuba County and the other involved agencies are on a steering committee that is working to implement the Byway plan.



SECTION SEVENTEEN ENERGY RESOURCES



SECTION SEVENTEEN ENERGY RESOURCES

This section identifies energy resources and potential resources in Yuba County, energy production, and the economic and environmental effects of energy production. Energy production in Yuba County provides local employment, energy resources for local use, and revenues to the county. Energy production can continue to be among the economic strengths of the county, and environmental consequences can be minimized through careful planning. Energy conservation and energy land use policy planning are also discussed in this section.

17.1 NATURAL GAS

According to the *Yuba County General Plan Open Space and Conservation Element* (County of Yuba 1973), small quantities of natural gas were produced in the county during the 1920s from fields thought to have been located near Wheatland and along the county's western border. Explorations have been made by private companies since that time, but no production has been established. The California Division of Mines and Geology indicated that, based on geologic features, there could be some natural gas deposits in the Central Valley portion of the county.

"Wet" natural gas is produced from oil reservoirs and occurs primarily in the San Joaquin Valley. "Dry" natural gas is obtained from gas deposits that do not co-occur with oil. Dry gas is abundant in the Sacramento Valley, but the nearest commercial gas production to Yuba County occurs in Sacramento, Yolo, Sutter, Colusa, Glenn, and Butte counties (Hart 1966:249-251).

It does not appear that future development in Yuba County will have a significant impact on commercial gas production. However, the County may wish to identify those areas of potential production in order to avoid conflicting land uses in the event that the County wants to maintain an option to develop this resource. Drilling could be regulated by the County through the conditional use permitting process, and drilling and production would conform to regulations of the Division of Oil and Gas of the California Department of Conservation. If commercial quantities of gas are present, it represents a source of direct revenues to County government as well as a source of employment and other economic benefits. If the County is interested in preserving its options to develop natural gas resources, it should assure



any areas proposed for new urban development in the *General Plan* do not contain known gas fields. This can also be accomplished during geologic and technical studies in association with the EIR process for proposed developments.

Along with potential economic benefits to the county, including revenues and employment opportunities, gas production could also result in environmental impacts. Natural gas extraction facilities may adversely impact or be constrained by the following environmental issues (Crawford Multari & Starr 1991:44-45):

Geologic and Topographic Features

- increased soil erosion potential during exploration and initial production
- risk of spills, leaks, or discharges that can contaminate soil
- ground subsidence that can damage infrastructure such as roads, structures, sewer, water, and gas mains

Hydrology

- pumping extracted wastewater into fresh water aquifers through injection wells
- polluting surface or groundwater resources through accidental spills or material extracted from wells
- increasing sedimentation to nearby creeks

Air Quality

- generating air pollutants during recovery and refinement
- increasing vehicle traffic associated with transport of oil and gas

Biological Resources

- degrading air, water and soil quality
- converting wildlife habitat to incompatible industrial uses



Aesthetics

- occupying large areas of land
- constructing drilling facilities with tall derricks
- creating objectionable odors

Mitigation of such impacts could be provided through the conditional use permit and CEQA processes if and when gas exploration or production are proposed. These activities should not be allowed in sensitive environmental settings, such as wetlands, flood plains, and riparian zones.

17.2 HYDROELECTRIC POWER GENERATION AND POTENTIAL

17.2.1 Existing Hydroelectric Facilities in Yuba County

Narrows Power House I and Narrows Power House II are located at the outlet of Englebright Reservoir on the main Yuba River about two miles northeast of Smartville. Narrows Power House I is operated by PG&E. Narrows Power House II is operated by the Yuba County Water Agency.

Colgate Power House is located where the Middle and North Yuba rivers converge at the upstream end of Englebright Reservoir. This facility also is operated by the Yuba County Water Agency. Colgate Tunnel runs from New Bullards Bar Reservoir about three miles to the Colgate Power House.

17.2.2 History of Hydroelectric Power Generation in Yuba County

At least half of Yuba County lies in the foothills and mountains of the Sierra Nevada. Hydroelectric power generation began relatively very early in the Sierra Nevada, and many pioneering developments in hydroelectric power production and transmission occurred here. Hydroelectric development has long been a pillar of the Sierran economy, providing jobs and revenues to counties that embrace a portion of the mountains. There are several environmental and historical reasons why the Sierra Nevada is particularly well-suited to this important economic activity.

Because Sierran streams tend to drop more steeply than the bordering ridges, water can be diverted from them, led by flume, ditch, or canal to the top of a ridge or plateau, and then along it for some miles downstream until a fall



(i.e., hydraulic head) of several hundred feet has been developed. The water can then be dropped via penstocks (i.e. pipelines) through turbines into the original stream. Thus, the high head or fall makes up in hydraulic energy potential what California streams often lack in volume. Above 5,000 feet elevation, much of the precipitation falls as snow. The gradual runoff of melt helps to equalize the flow to some extent over a longer period of the year. As compared to other areas of the arid West, the more gradual and even flow of Sierran streams reduces the need for large storage reservoirs.

The California gold mining industry played a fundamental role in the development of hydroelectric power generating in the state and helped to shape its unique character. By the 1860s, over 5,000 miles of artificial water courses had been constructed, and by the 1880s, there were more than 8,000 miles. Many of these water systems were ultimately incorporated into the hydraulic systems of hydroelectric plants. Another legacy of the California gold mining industry that contributed greatly to the evolution of the hydroelectric industry was the development of the tangential impulse wheel, also known as the Pelton wheel, the prime mover most commonly used in early California hydroelectric systems to drive generators.

Gold mining in the state also contributed legal mechanisms that favored the power generating industry. Water rights laws in the eastern United States were governed by the principle of ownership, by which the owners of lands fronting streams were entitled to the rights to all waters that naturally flowed in those streams. In the West during the Gold Rush, however, miners simply posted water rights claims, recorded like mining claims, with county recorders. As long as the claimant continued to utilize the water rights, he was perpetually entitled to a specific volume of flow from a specific stream or spring. The general acceptance of the doctrine of appropriation enabled first the miners, and later utility companies to divert sufficient volumes of water from one or more streams to wash away mountains or generate significant amounts of power without being subject to lawsuits from stream-front property owners downstream. In 1935, the California Supreme Court upheld a 1928 amendment to the State's Constitution that effectively overturned most of these legal precedents governing water rights in California, but by that time, the hydroelectric industry had been well established.

By the turn of the century, at least 18 hydroelectric plants had been constructed in the Sierra Nevada Mountains, including two in Yuba County.



Hydroelectric power enabled farmers to pump water from rivers and canals as well as from wells as deep as 2,500 feet below the ground surface. The Yuba Powerhouse, operated by the Yuba Power Company in Brown's Valley east of Marysville, became, in 1898, the first hydroelectric system to deliver power to the California Central Valley for agricultural irrigation pumping. By around the same time, this forerunner of PG&E also operated the Colgate hydroelectric plant on the North Yuba River (Coleman 1952; Farber 1988; Reynolds and Scott 1980).

17.2.3 Hydroelectric Power Generation Planning

Hydroelectric power generation is considered to be one of the "cleaner" methods of generating electricity. No fuels are consumed, either fossil or nuclear, and thus this method of power production does not greatly affect air quality nor result in disposal problems for radioactive or combustion wastes. Along with these environmental "benefits" of hydroelectric facilities, they also provide revenues to the county, employment opportunities, and recreational opportunities associated with reservoirs. Development of hydroelectric potential does, however, entail some potentially adverse environmental effects. Those environmental issues associated with the siting and operation of hydroelectric facilities are as follows (Crawford Multari & Starr 1991:45-46):

Hydrology

- changing stream flows
- changing the groundwater recharge regimen
- affecting water turbidity (the amount of sediment within the water), oxygen content, and water temperature

Biological Resources

- displacing terrestrial habitat with a new lake environment
- restricting wildlife migration patterns, particularly of anadromous fish
- altering water quality and quantity, thereby adversely impacting aquatic life



Geologic and Topographic Features

- increasing erosion potential during construction
- creating exposure to earthquake hazards
- creating landslide potential

Aesthetics

- being located on steep, visible slopes to take advantage of hydrostatic head
- converting a free flowing natural stream landscape to an industrial-looking facility

Cultural Resources

- reservoirs inundate cultural sites, many of which are located along water courses
- disturbing or destroying archaeological sites during construction

The County should be aware that if it desires to harness more of its hydroelectric potential, many of these environmental effects can be avoided through modern design and construction techniques. Rather than damming entire rivers, thus creating large inundated areas and barriers to fish migration, many new hydroelectric facilities use small wing dams, which can be constructed of native materials and well-camouflaged, to divert only a small portion of the stream flow. Several water sources can be tapped and combined and conveyed along ridges to develop head. This water is then returned to the stream below the generating plant. Above-ground penstock (i.e., large-diameter water conveyance pipe), which causes visual impacts, erosion, and barriers to animal movements, is now often replaced by below-ground penstock in tunnels created by modern boring machines, thus avoiding virtually all above-ground impacts. With careful consideration to design and environmental variables, Yuba County can continue to develop its hydroelectric potential while minimizing environmental consequences.

When siting such facilities, consideration should also be given to land use issues as well, such as locating facilities downstream from major population centers, where possible, to avoid hazards associated with dam failure.



Consideration should also be given to potential land use conflicts resulting from recreational uses created by constructing a reservoir/dam project, such as boating, fishing and swimming.

Hydroelectric facility permitting is controlled by the County except where it is proposed on lands administered by the state or federal government. However, approvals are also normally required from one or more of the following state and federal agencies: State Water Resources Control Board, California Department of Water Resources, and the Federal Energy Regulatory Commission (FERC). Other approvals commonly required for hydroelectric facilities are California Department of Fish and Game (CDFG) Series 1600 Streambed Alteration Permits and U.S. Army Corps of Engineers Section 404 permits that apply to disturbances of jurisdictional wetlands. Most projects that occur along or within streambeds are subject to National Pollution Discharge Elimination System (NPDES) permits, which in California, are issued by the Regional Water Quality Control Boards on behalf of the U.S. EPA, which administers the NPDES program.

17.3 BIOMASS ENERGY

Biomass energy generation involves generating electricity by burning biomass as a fuel, rather than coal, oil, or nuclear fuel. Biomass can be any combustible organic material, including agricultural and industrial wastes, crops grown specifically for biomass conversion, and forest slash created by timber harvesting or salvaged in fire areas. Yuba County's agricultural industry offers significant potential for biomass energy production. Crop residues, such as rice straw left over after harvest, represents considerable potential biomass tonnage that can be used to generate electricity. One such waste-to-electrical-energy plant presently exists in Yuba County, in Arboga. The facility (Sithe Energies), located on the west side of Feather River Boulevard, converts wood waste to electrical power which is sold to PG&E.

Aside from the potential energy benefits of biomass conversion, air quality benefits may also result. Currently, much forest slash and agricultural waste is burned in the fields and forests, contributing to local non-attainment of air quality standards for particulate matter and other pollutants. While biomass conversion often creates air quality impacts of its own, it may result in a net decrease in pollutant emissions. Furthermore, it is technically far more feasible to control emissions from the smokestack of a generating plant than from a burning rice field.



Recently adopted legislation already requires a phased reduction in burning of rice straw. However, the characteristics of rice straw also limit its utility for biomass conversion. Requirements of the Clean Air Act, coupled with the current inability to use rice straw as a biomass feedstock, may significantly affect the rice industry in Yuba County. However, it may eventually become more feasible to use rice straw for biomass conversion, and there are many other sources of biomass that can be used to fuel energy production. A wide variety of both agricultural and industrial wastes can be adapted to this purpose. When waste material is disposed of while simultaneously generating electricity, the county can benefit doubly.

The following general environmental issues are associated with the siting and operation of biomass conversion facilities (Crawford Multari & Starr 1991:47-48):

Geologic and Topographic Features

- requiring landfill space for ash disposal
- creating the potential for erosion and soil impacts from crops raised specifically for biomass consumption
- increasing runoff and resulting sedimentation and leaching of pesticides and fertilizers

Air Quality

- emissions of carbon dioxide, oxides of nitrogen, sulfates, and particulate matter into the atmosphere
- creating objectionable odors near adjacent sensitive land uses
- employing grain elevators, screening, and grinding equipment during the fuel loading, drying and handling processes
- increasing vehicle traffic associated with transporting biomass products

Noise

- Steam release creates periodic noise



Hydrology

- using large quantities of water for cooling and washing of facilities
- creating contaminated waste water
- requiring additional treatment facilities to treat contaminated waste water

Biological Resources

- exposing humans, wildlife and habitat to pollution by-products
- eliminating endangered species and/or their habitat through removal of forestry slash

Aesthetics

- creating a relatively large, industrial type land use
- employing tall stacks to vent exhaust emissions that are highly visible
- creating plumes of smoke or steam that are highly visible
- creating light and glare

Traffic Circulation

- requiring large trucks to transfer biomass products to conversion facilities, assuming such facilities are not located where the biomass is generated
- impacting rural roads that may not designed to handle the weight of fully loaded transfer trucks
- creating safety hazards from large trucks that may constrain traffic movement

Because of the potential to put the county's large volumes of forest and agricultural waste to productive use, along with the need for employment opportunities and revenues, provision for biomass production should be made in the County's *General Plan* and Zoning Ordinance. At the same time, compliance with the Clean Air Act must be kept in mind. This issue should be addressed in the Feather River AQMD's *Air Quality Attainment Plan*, and there should be consistency between that Plan and the County's *General Plan*.



17.4 ENERGY PRODUCTION AND LAND USE COMPATIBILITY

In addition to the potential benefits of energy production facilities and the impacts they may have on the environment, there is also a potential for land use conflicts to occur as briefly summarized below. The *Yuba County General Plan* should include goals, policies and implementation measures that address land use compatibility issues related to natural gas production and transmission, hydroelectric facilities, and biomass conversion. The following discussion is attributable to Crawford Multari & Starr (1991), unless otherwise noted.

Gas and Oil Wells and Pipelines: Gas field development requires initial exploratory activity and later drilling operations that may conflict with noise sensitive land uses. Seismic testing may involve the use of explosives or "thumper trucks" (trucks equipped with pounding equipment that send sound waves into the ground), and drilling rigs typically operate on a 24-hour basis until a well is completed, producing noise and vibrations that could affect nearby uses. Possible hazards include some fire and explosion risks, though such events are rare. For these reasons, urban development (especially residential and commercial uses) should be restricted to low densities in or near prospective gas fields, if allowed at all.

Natural gas wells require above-ground valves and other metering devices, pipelines, and maintenance access roads. Such ancillary facilities may conflict with existing agricultural uses by hindering movements of farm machinery and irrigation equipment, as well as effectively removing agricultural uses where such facilities must be situated. In those areas using ground water sources for domestic water supply, injection well activity may conflict with established residential uses.

Hydroelectric Facilities: Dams used to create reservoirs present the possibility of hazards to downstream land uses in the event of dam failure, though such occurrences are extremely rare because of construction standards and continuing safety inspections required by the State Division of Dam Safety. While it may be impractical to avoid locating such facilities upstream from major population centers, care should be given to the siting of community emergency response



facilities (hospitals, potential emergency shelter sites, control centers, etc.) downstream from reservoirs.

Dams constructed along free-flowing rivers or streams may conflict with recreational uses of the waterway, including certain types of fishing (along with impeding fish migrations for spawning). Conversely, reservoirs can often create new recreational opportunities such as swimming, boating, and fishing, although such activities may not be compatible with nearby hydroelectric generating facilities. Restricted access near generating facilities can help mitigate such potential conflicts.

Biomass Conversion: Biomass facilities generally take the form of relatively large, industrial plants. They can generate smoke and odors that can be offensive or even hazardous to downwind populations. Such facilities may also require the use of large trucks or other noisy equipment to deliver biomass fuel and remove resulting waste products. For these reasons, biomass facilities should generally be located in areas suitable for industrial development and away from residences, retail commercial areas, recreation areas, or sensitive wildlife habitats.

17.5 ENERGY EFFICIENCY AND CONSERVATION

This section has been prepared to identify energy use patterns and energy efficiency and conservation programs that may reduce energy use. Several factors are identified that affect energy use in Yuba County. For residential use, those factors include population, climate, building and design standards, and appliances. Generally, energy use will grow proportionally with population. The effects of climate are rather obvious, with greater energy being consumed during periods of hot and cold weather. The efficiency of household appliances also affects energy use, with older appliances less efficient than newer ones.

For commercial and industrial uses, heating, ventilation, air conditioning, lighting, and refrigeration are the largest energy factors, with manufacturing itself being significant in certain industries. In agriculture, most energy use is associated with surface and groundwater pumping.



Transportation energy use is primarily related to the individual automobile. Automobile energy consumption is affected by the number of vehicles, vehicle miles traveled (VMT), and the efficiency of those vehicles. Yuba County, being primarily rural, has relatively few vehicles as compared to other areas of the State, but the relatively low population density, the tendency for population to be decentralized in suburban and rural areas, and the lack of public transportation causes trips to be relatively more frequent and to cover longer distances than in more urbanized regions. Agricultural products transportation also affects energy use. Rail service uses one-fourth the energy to move goods than truck transport. The prohibition on triple tractor trailers in California also results in greater energy use, because most truck tractors run more efficiently hauling heavier loads. However, other factors, particularly safety, dictate this prohibition.

Land use planning can have a significant influence on energy use. Scattered, discontinuous patterns of development create more automobile trips and VMT for basic goods and services. Remote developments far from jobs also increases transportation energy use. The County should plan with energy conservation in mind as a significant factor as it designates areas appropriate for development of particular land uses. Access to present and future alternative transportation should also be factored into planning decisions. Provisions should be made in new developments for pedestrian and bicycle use, park-and-ride lots, and mass transit facilities.

Construction methods and siting of structures should be reviewed with energy conservation in mind. Programs for retrofitting existing homes and businesses for energy conservation should also be encouraged. This should go hand-in-hand with public education programs. Buildings with south-facing windows are far more energy efficient than structures with large east and west-facing windows that can result in summer heat buildup and excessive air conditioner use, often during periods of peak demand. Lot orientation is an important influence, since on typical suburban residential lots, most windows face the front and back yards (WPM Planning Team, Inc. 1991:14-3).

Energy resource development and energy conservation should be addressed in *General Plan* goals, policies, standards, and implementation measures. Energy resource development can provide economic benefits to the county, but goals, policies, standards, and implementation programs must address the potential for environmental impacts and land use conflicts. Energy conservation will provide both economic and environmental benefits to the county. Goals, policies, standards, and



implementation measures for energy conservation should be developed to assure that the County's planning programs can take advantage of these benefits.

Guidance to counties and cities that seek to incorporate energy policies into their general plans is provided by the California Energy Commission's *Energy Efficiency Guidelines for Local Planning: Summary and Assessment of Energy Policies in General Plans*. A draft of this document was circulated by the Commission in April 1990. It includes a compilation of effective energy goals and policies adopted by jurisdictions throughout California.



SECTION EIGHTEEN
SOLID AND HAZARDOUS WASTE



SECTION EIGHTEEN SOLID AND HAZARDOUS WASTE

The handling and disposal of hazardous wastes in Yuba County are discussed in Section 9.2 under the heading "Risk of Upset." Also included in Section 9.2 is a discussion of the County's procedures for responding to emergencies involving hazardous wastes and hazardous materials. A summary of the Yuba County *Hazardous Waste Management Plan* is included in Section 19.7.

18.1 EXISTING AND FUTURE LANDFILLS

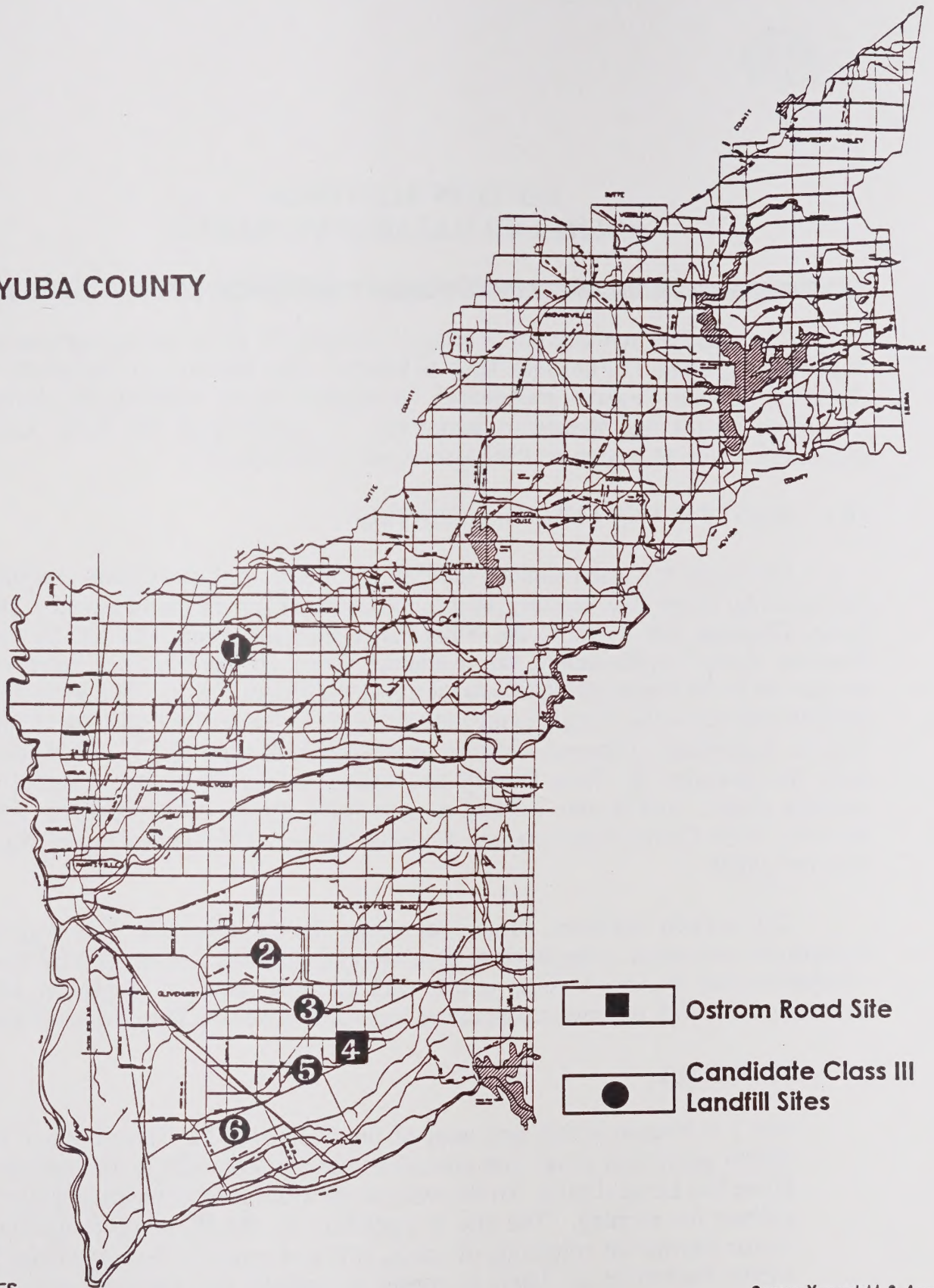
Currently, five active sanitary landfills are located in Yuba County, including: the Beale Air Force Base sanitary landfill, the Quinco Corp. Disposal Site, the Yuba-Sutter Disposal, Inc. Landfill, the Yuba-Sutter Disposal Area, and the Speckertt Disposal Area. Additionally, six candidate Class III landfill sites have been designated in the county (EMCON Associates 1984)(Figure 18-1). The two primary landfills that serve the Yuba County public, the Yuba-Sutter Disposal, Inc. Landfill and the Yuba-Sutter Disposal Area, are described in Section 13.2.1. In addition, a sixth site operated by Yuba County and known as the Ponderosa Landfill was recently closed and is now utilized as a transfer station (Rick Helman, Senior Planner, Yuba County Planning and Building Services Department, pers. comm., October 1992).

This section evaluates, in general terms, the six candidate sites regarding topographic alteration, slope stability, erosion potential, unstable cut and fill slopes, collapsible and expansive soils, trench wall stability, erosion of graded areas, alteration of runoff, unprotected drainage ways and increased impervious surfaces.

18.1.1 Site 1

Site 1 is located within and west of the Trainor Hills. The Trainor Hills exhibit gentle low relief with elevations ranging from 120 to 175 feet above Mean Sea Level (MSL). To the west of the Trainor Hills the area is flat and utilized for farming. The site is underlain by the Pleistocene age fluvial Victor Formation consisting of sands, silts and gravels. Soils overlying the Victor Formation are likely to consist of gravelly silts and clays with local outcrops of the Victor Formation likely to exist within the hill area. Depth

YUBA COUNTY



**CANDIDATE CLASS III
LANDFILL SITES**

**FIGURE
18-1**



to groundwater is thought to be greater than thirty feet except near creeks which act as a line recharge source. The site is immediately east of the 100 year flood plain of an unnamed creek.

Topographic Alteration: Topographic alteration of this site could consist of excavation of trenches for the deposition of refuse, removal of cover material and the elevation of stockpile material. Cut and fill slope construction may be necessary within areas of high relief.

Slope Stability: There is approximately 55 feet of relief within the eastern portion of the site. Shallow landsliding may occur locally, particularly in areas of oversteepened slope, deep colluvium, and during periods of heavy rainfall or seismic activity.

Erosion Potential: Soil erodes preferentially within channels draining westerly from the hills. The poorly consolidated nature of surface soils and the underlying Victor Formation make them susceptible to erosion particularly during periods of heavy rainfall.

Unstable Cut and Fill Slopes: Cut slope angles should be designed to conform to the competence of the material into which they are excavated. Cuts within the Victor Formation should take into account the dip and strike of the bedding and other structures as well as the material type. The cut and fill slopes should be designed in accordance with Uniform Building Code Chapter 70 guidelines and in general should be no steeper than 2:1 (horizontal to vertical) unless authorized by the Geotechnical Engineer.

Collapsible and Expansive Soil: Collapsible soils such as silts and moderately expansive soils such as certain types of clays can be found within areas which have a fluvial depositional history. These types of materials may be found within the western portion of this site.

Trench Wall Stability: In general, competent, firm native materials are anticipated within the eastern portion of the site. Subsurface conditions may become less competent and variable to the west approaching the creek channel. Trenches greater than 5 feet in depth should be shored or sloped back at a 1:1 (horizontal to vertical) slope angle in accordance with the Occupational Safety and Health Administration regulations if personnel are to enter the excavations.



Erosion of Graded Areas: Surface soils may be subject to erosion when excavated and exposed to weathering. Erosion control measures should be implemented during and after construction that conform to the National Pollutant Discharge Elimination System Storm Drain Standards and Yuba County Standards.

Alteration of Runoff: Rainfall should not be allowed to pond or soak into the landfill cover material. It should be collected and channelled into an appropriate collection system designed to receive the runoff, minimize erosion and convey the runoff off site.

Unprotected Drainage Ways: Conduits intended to convey drainage water off site should be protected with energy dissipaters as appropriate and lined with an impermeable, impact proof material.

Increased Impervious Surfaces: Landfill covers, parking facilities and buildings are all impervious surfaces which concentrate runoff and artificially change existing conditions. Collection systems should be designed to divert natural drainage away from these structures and to collect water concentrated by these surfaces and convey it away from the site in accordance with the National Pollutant Discharge Elimination System Storm Drain Standards and Yuba County Standards.

Potential Impact on Shallow Groundwater: There should be no recharge of groundwater from the waste stock pile. Shallow groundwater will be recharged off-site by the runoff collection system.

18.1.2 Sites 2, 3, 4, 5, and 6

Sites 2, 3, 4, 5, and 6 are all located on nearly flat land which either has been or is currently being used for agriculture. Bedrock underlying this area is thought to be Pleistocene age fluvial Victor Formation consisting of sands, silts and gravels. This formation is overlain by residual soils and alluvium consisting of interbedded sandy silts, sandy clays and clays, local hardpan zones may be present at depths of three to four feet. Site 2 is within the inundation zone for catastrophic failure of New Bullards Bar and Englebright Dams (CH2M Hill and U.S. Army Corps of Engineers). Sites 3 and 4 are approximately two miles southwest of the western runway of Beale Air Force Base. Site 4 is the Ostrom Road Site which is currently planned to replace



the YSDI site in Marysville when the Marysville site reaches capacity. Site 5 is located about 500 feet northeast of a small privately owned air strip. The following descriptions apply to all of these sites.

Topographic Alteration: Topographic alteration of these sites could consist of excavation of trenches for the deposition of refuse, removal of cover material and the elevation of the stock pile material.

Slope Stability: Because these sites are essentially flat, slope stability is not expected to be an issue.

Erosion Potential: Because of the low relief of the sites erosion potential is expected to be low and limited to a few shallow drainage courses and sheet flow.

Unstable Cut and Fill Slopes: Cut slope angles should be designed to conform to the competence of the material into which they are excavated. Any cut or fill slopes should be designed in accordance with Uniform Building Code guidelines and in general should be no steeper than 2:1 (horizontal to vertical) unless authorized by the Geotechnical Engineer.

Collapsible and Expansive Soil: Soils such as collapsible silts and expansive clays can be found within areas with a fluvial depositional history. All of the candidate sites are located either adjacent to or within 100 feet of a stream. Low density, collapsible soils and soils ranging from low to highly expansive can be expected to occur within these areas.

Trench Wall Stability: Subsurface conditions may be somewhat variable ranging from competent to weak. The weaker soils can be expected nearer the creek channels. Trenches greater than 5 feet in depth should be shored or sloped back at a 1:1 (horizontal to vertical) slope angle in accordance with the Occupational Safety and Health Administration regulations if personnel are to enter the excavations.

Erosion of Graded Areas: Surface soils may be subject to erosion when excavated and exposed to weathering. Erosion control measures should be implemented during and after construction to conform with National Pollutant Discharge Elimination System Storm Drain Standards and Yuba County Standards.



Alteration of Runoff: Rainfall should not be allowed to pond or percolate into the landfill cover material. It should be collected and channelled into an appropriate collection system designed to receive the runoff, minimize erosion and convey the runoff off-site.

Unprotected Drainage Ways: Conduits intended to convey drainage water off site should be protected with energy dissipating devices as appropriate and lined with an impermeable, impact proof material.

Increased Impervious Surfaces: Landfill covers, parking facilities and buildings are all impervious surfaces which concentrate runoff and artificially change existing drainage conditions. Collection systems should be designed to divert natural drainage away from these structures and to collect water concentrated by these surfaces and convey it away from the site in accordance with the National Pollutant Discharge Elimination System Storm Drain Standards and Yuba County Standards.

Potential Impact on Shallow Groundwater: There should be no recharge of groundwater from the waste stockpile. Shallow groundwater will be recharged off-site by the runoff collection system.

18.1.3 Combined Landfill Capacity

The combined capacity of the three landfills open to the public in Yuba County in 1989 (which serve both Yuba and Sutter counties) was estimated at 2.28 million cubic yards. At the 1989 disposal rate of approximately 214,000 cubic yards per year, the combined life of the three facilities was then estimated at 10.7 years (Sutter-Yuba Bi-County Solid Waste Authority 1989:12). It should be kept in mind, however, that at least three factors could have a significant effect on landfill capacity. First, the YSDA facility may eventually be shut down. Second, as stated in Section 13.2.5, resource recovery operations at the YSDI landfill site may significantly increase the life of that landfill. Third, the County recently closed the Ponderosa Landfill and converted it to a transfer station.

18.1.4 Future Landfill Capacity

The Bi-County Integrated Waste Management Authority (formerly the Solid Waste Authority) currently plans to replace the YSDI landfill with a facility



on Ostrom Road east of Jasper Road, south of Beale AFB (Figure 8-1 Site 4) (Keith Martin, Administrator, Bi-County Integrated Waste Management Authority, pers. comm., April 1992). The County has issued a conditional use permit for the site to operate as a landfill, but State Integrated Waste Management Board and Regional Water Quality Control Board permits and approvals have not yet been issued (Rick Helman, Senior Planner, Yuba County Planning and Building Services Department, pers. comm., November 1992).

18.1.5 Household Hazardous Waste Disposal

As stated in Section 9.1, untreated household hazardous wastes are no longer accepted for disposal in landfills. According to the *Draft Yuba County Hazardous Waste Management Plan* (County of Yuba 1988:4-21), as of 1987, Yuba County households generated at least 79 tons of household hazardous waste per year. The *Yuba and Sutter Bi-County Solid Waste Management Plan and Program Revision* (Sutter-Yuba Bi-County Solid Waste Authority 1989:3-5) provides for management of this waste stream by means of a program that includes three elements: a household hazardous waste collection program, a random load checking program (to ensure that these wastes are not included in refuse being landfilled), and a public information program.

18.1.6 Asbestos Waste Disposal

During the five-year period from 1983 to 1987, about 77.5 tons of asbestos waste were generated in Yuba County. This waste stream was generated in response to legislation requiring removal of asbestos-containing materials from public buildings as well as from the efforts of individuals to remove asbestos from their homes and businesses. It is expected that this level of generation will continue for several more years. The majority of asbestos wastes generated in the county are removed to the Anderson landfill in Shasta County, the West Contra Costa County landfill at Richmond, and the Kettleman Hills landfill in Kings County. No asbestos wastes are disposed of in Yuba County. These wastes must be removed and transported by licensed contractors, and proper manifests must accompany each shipment as provided by Title 22 of the California Code of Regulations; Environmental Protection Agency requirements under RCRA; OSHA requirements; and Regional Water Quality Control Board (RWQCB) permitting conditions for the disposal facilities (Sutter-Yuba Bi-County Solid Waste Authority 1989:6-7).



18.1.7 Septage and Sewage Sludge Disposal

Septage sludge is the solid material removed when septic tanks are pumped. Approximately eight commercial septic pumping firms operate in the bi-county area. They all dispose of septage sludge at the Yuba City Sewage Treatment Plant, the only facility in the bi-county area that is currently equipped to accept such wastes. After treatment (to destroy pathogens or disease-causing organisms) and dewatering (to achieve the required level of 20% solids), the sludge is temporarily stockpiled at the Yuba City Sewage Treatment Plant site pending identification of a future use for the material (e.g., composting). This practice is regulated and permitted by the RWQCB. Recent acquisition of 8.1 acres of land adjacent to the treatment plant provides sufficient sludge storage capacity for the next 30-40 years. If a use for the sludge is not found, the material will be permanently disposed of and covered in the available land.

The six sewage treatment plants in the bi-county area (including the Linda County Water District sewage treatment plant, the City of Marysville sewage treatment plant, the Olivehurst Public Utility District sewage treatment plant, and the City of Wheatland sewage treatment plant along with two plants in Sutter County) operate independently of one another. They generate a combined annual total estimated at 1,200 tons of dried sewage sludge. Disposal of the sewage sludge, which is generated by wastewater treatment operations (not to be confused with septage sludge pumped from septic tanks) is regulated separately at each facility by the RWQCB and the appropriate County Environmental Health Department.

The Linda plant disposes of sewage sludge removed from its drying beds in a 135 acre on-site landfill with a capacity estimated in 1989 at well over 20 years. The Marysville and Wheatland plants were permitted in 1989 to contract with the firm Biosystems Management International to use the sludge material in landfill caps at approved facilities. This use will facilitate re-vegetation of the landfill caps. Marysville and Wheatland are evaluating this and other disposal methods before arriving at a long-term solution that will satisfy city needs and RWQCB requirements. The Olivehurst plant spreads the sewage sludge on an approximately 6 acre on-site parcel where it is disked into the ground. This method is expected to provide virtually perpetual capacity (Sutter-Yuba Bi-County Solid Waste Authority 1989:8-9).



18.2 BIOMASS COGENERATION

Biomass cogeneration involves generating energy using biomass (i.e., organic matter) as a fuel. Crops can be grown to fuel cogeneration plants, or such plants can be fueled with organic wastes. The latter solves two problems simultaneously: energy production and waste disposal. Please refer to Section 17.4 of this document for a discussion of biomass cogeneration under the general heading of "Energy."

18.3 YUBA COUNTY INTEGRATED WASTE MANAGEMENT PLAN AND RESOURCE RECOVERY

The *Yuba-Sutter Bi-County Solid Waste Management Plan and Program* (SWMP), prepared in 1976 pursuant to the California Solid Waste Management and Resource Recovery Act of 1972, is the planning mechanism that presently governs solid waste disposal in Yuba County. The State Solid Waste Management Board approved the SWMP in November 1979. State law required that each waste plan be reviewed every three years and revised as necessary. The Bi-County Solid Waste Authority report of the triennial review of 1987 was submitted to the CWMB, which resulted in the Board's Resolution 88-4. This resolution called for revisions of or additions to the SWMP in six specific areas: household hazardous waste disposal, asbestos waste disposal, septage and sewage sludge disposal, eight year demonstrated solid waste disposal capacity, resource recovery (i.e., recycling), and Yuba-Sutter disposal area compliance. The revisions were submitted to the Board in May 1989 and approved in July 1989 (Sutter-Yuba Bi-County Solid Waste Authority 1989).

Assembly Bill 939, passed in 1989, mandated that all California counties adopt an "Integrated Waste Management Plan" (CoIWMP) by July 1, 1991, to supersede county SWMPs. Those counties with a landfill capacity exceeding eight years have until 1994 to complete their CoIWMPs. The CoIWMP places a greater emphasis than the SWMP on source reduction, recycling, reuse, and composting of wastes, with the goal of 25 percent reduction in solid waste disposed of by landfill by the year 1995 and 50 percent reduction by 2000.

The following information derives from the *Yuba and Sutter Bi-County Solid Waste Management Plan and Program Revision* (Sutter-Yuba Bi-County Solid Waste Authority 1989:13-16).

As of 1989, there was no full curbside recycling program in Yuba County except for bundled newspapers, which YSDI collects with all proceeds being donated



to the local Kiwanis Club. Voluntary recycling facilities are provided by at least six firms in the bi-county area: North Beale Recycling Center, Re-Cycle All, Recycle American, Recycling Industries, Yuba City Scrap & Steel, Inc., and YSDI. YSDI operates the most comprehensive such service in the area, with five redemption centers that accept glass, newspaper, aluminum cans, and plastic. Other locations of YSDI accept cardboard, and the company operates a truck that collects cardboard from local businesses requesting such service.

There are at least 11 auto dismantlers and one scrap iron and steel recycling business serving the bi-county area. The auto dismantlers process at least 2,000 tons of auto bodies, loose tin, and cast iron, annually. All of the recycled materials are transported to Sacramento, Portland, or Seattle, where a portion is shipped to Japan for re-use.

At least six thrift stores in the two counties repair and re-sell used clothing, furniture, and appliances. There is no available estimate of the amount of material removed from the solid waste stream by these operations.

Four private firms provide waste oil removal services in the bi-county area. These firms include: California Oil Recyclers, Newark; Chico Drain Oil Service, Chico; Ramos Environmental Services, West Sacramento; and Refineries Services, Patterson. According to the Yuba County Draft Hazardous Waste Management Plan (HWMP), about 1,315 tons/year of waste oil was generated in the county in 1986 (County of Yuba 1988:Table 4-2). The amount has probably increased since that time approximately proportional to population growth. It is not presently known how much of that waste oil is being recycled.

It was estimated in 1989 that the then-current recycling programs discussed above diverted an estimated 10-15 percent of the bi-county area waste stream. These and other programs are expected to continue with at least the same impact on waste stream reduction.

Future waste reduction and resource recovery plans in Yuba County center around continuation of the operations described above combined with a materials recovery facility (MRF). Norcal Solid Waste Systems, Inc., the parent company of YSDI, constructed a state-of-the-art MRF at the YSDI landfill site in Marysville. This project was conceived as a pilot program for developing such plants at other Norcal subsidiary facilities. The facility was designed to include a public buyback center, a public disposal area, and a main recycling building where sorting and



processing take place using a system of conveyors, mechanical screens, magnets, and balers. The facility was designed to recover five categories of materials, including paper, food and beverage containers, wood, ferrous (i.e., iron-based) metals, and inert materials, such as dirt, gravel, bricks, concrete, and asphalt.

The MRF was designed to initially handle 450 tons per day. Within the first few months of operations, the MRF was expected to begin diverting 10-15 percent of the waste stream from the landfill. As public awareness grows, collection routes are reorganized, and knowledge of the waste stream is refined, YSDI expects the diversion rate to increase to 35 percent by the end of the first six to eight years of operations.

The impact of the MRF on the anticipated life of the YSDI landfill is significant. Based on initial estimates of the diversion rate and the expected gradual increase in the diversion rate, it is estimated that the life of the landfill would increase from the 1989 estimate of 8.6 years to 12.3 years.

The resource recovery goals established by the revised SWMP in 1989 were to recycle at least 20 percent of the bi-county area's solid waste stream by 1990. It is expected that up to 35 percent of the waste stream will be recycled by 1998.



SECTION NINETEEN OTHER PLANS AND POLICIES



SECTION NINETEEN OTHER PLANS AND POLICIES

19.1 PRESENT YUBA COUNTY GENERAL PLAN

The current *Yuba County General Plan* consists of the following elements:

- Land Use Element
- Open Space and Conservation Element
- Circulation Plan
- Noise Element
- Housing Element
- Seismic Safety and Safety Elements

The *Land Use Element* (adopted in 1981, with subsequent amendments) is described as a collection of long range objectives, policies and proposals concerning the physical, economic and social development of the county, the primary purpose of which is to promote a balanced and functional mix of land uses. This plan contains the following goals:

Community Identity	To retain and strengthen community identity in the foothill areas
Timber Lands	To preserve, maintain and restore forestry resources for their economic, conservation, and open space values
Agriculture Lands	To protect and maintain agricultural lands for the value of their products and economic impact



New Development	To ensure that new development is planned and occurs in a manner that will minimize grading, vegetation disturbance, intrusion onto natural water courses, and encroachment onto archaeological, historical or rare and endangered species sites.
Commercial Development	To provide for commercial land uses that adequately meet the anticipated needs and are served with adequate facilities.
Industrial Land Uses	To provide for industrial land uses that meet the needs of the economic base and the goals and policies of the County.
Circulation	The Yuba County circulation system shall be maintained and improved to provide for the safe and efficient movement of persons and products.
Environmental Resources	To protect natural resources which are of significant long range social, economic and environmental importance.
Public Services	To coordinate public services and facilities provided by various agencies to reduce the operational costs.
Residential	To promote diversity of residential densities which are consistent with the social, economic, transportation and environmental goals of the County.

The *Land Use Element* designated all lands in the unincorporated area for various land use categories. Table 19-1 shows the acreages, land use densities and intensities, and population at buildout for each land use category.



The *Open Space and Conservation Element*, adopted in 1973, was intended to identify types and uses of open space and natural resources in the county and establish goals and policies for their optimum use. It was designed to provide a planning framework for future decisions regarding the preservation, utilization, and development of the county's natural environment. At the time this plan was written, it was reported that approximately 96 percent of the total land area of the county was devoted to open space uses, including agriculture, timber and grazing lands. The goals of the plan are as follows:

- To maintain and enhance the natural resources, open space land uses and scenic beauty in Yuba County in order to protect the quality of the environment, the county's economy, and the health and well-being of present and future residents.
- To preserve scarce natural resources and to achieve a balance between the conservation and utilization of other natural resources in order to meet the economic, physical and social needs of the county.
- To protect valuable natural, man-made and agricultural resources, and to manage these resources to insure a maximum economic return with a minimum adverse environmental impact.
- To set aside sufficient areas to meet future county park and recreation needs.
- To protect the health and safety of Yuba County residents and visitors by regulating lands located in floodplains, unstable soil areas, earth-quake fault zones, and other areas inherently unsuited for intensive human use.

The *Circulation Plan 1970*, adopted in 1969, is the oldest of the elements comprising the current *General Plan*. Many things have changed since its adoption, including the level of State and federal funding for new freeway projects, methods of determining roadway capacity and the adequacy of the planned transportation system to serve planned land uses, and roadway classifications and design standards.



TABLE 19-1
EXISTING YUBA COUNTY GENERAL PLAN
POPULATION DENSITY AND LAND USE INTENSITY

LAND USE CATEGORY	TOTAL ACREAGE	MAXIMUM SITE DENSITY/ INTENSITY	AVERAGE SITE DENSITY/ INTENSITY	POPULATION AT BUILDOUT
Open Space Recreation	25,680	N/A	N/A	N/A
Marysville Dam	21,000	0.2 Dwelling units per acre	0.2 Dwelling units per acre	10,500 @ 2.5 persons per dwelling unit
Industrial	3,900	30,000 sq ft gross floor area per acre	20,000 sq ft gross floor area per acre	N/A
Commercial	500	30,000 sq ft gross floor area per acre	20,000 sq ft gross floor area per acre	N/A
Planning Reserve (East Linda)	870	7.1 Dwelling units per acre	4.25 Dwelling units per acre	9,250 @ 2.5 persons per dwelling unit
Rural Estate Residential	3,600	1 Dwelling unit per acre	.75 Dwelling units per acre	6,750 @ 2.5 persons per dwelling unit
Agriculture	118,710	0.1 Dwelling unit per acre	.029 Dwelling units per acre	8,600 @ 2.5 persons per dwelling unit
Rural Residential	104,000	3 Dwelling units per acre	0.2 Dwelling units per acre	52,000 @ 2.5 persons per dwelling unit
Low Density Residential	1,630	7.09 Dwelling units per acre	4.25 Dwelling units per acre	17,320 @ 2.5 persons per dwelling unit
Medium Density Residential	1,700	17 Dwelling units per acre	12.75 Dwelling units per acre	54,200 @ 2.5 persons per dwelling unit



LAND USE CATEGORY	TOTAL ACREAGE	MAXIMUM SITE DENSITY/ INTENSITY	AVERAGE SITE DENSITY/ INTENSITY	POPULATION AT BUILDOUT
High Density Residential	340	29 Dwelling units per acre	21.75 Dwelling units per acre	18,500 @ 2.5 persons per dwelling unit
Timber Preserve	27,400	.006 Dwelling units per acre	.006 Dwelling units per acre	430 @ 2.5 persons per dwelling unit
U.S. Forest & BLM Land	72,000	0	0	0
Beale AFB	23,000	N/A	N/A	N/A
Extractive Industrial	5,300	N/A	N/A	N/A

Source: Yuba County General Plan, Land Use Element

For example, the *Circulation Plan* indicates that all four State routes (State Routes 65, 70, 20 and 49) within the county are planned eventually to become freeways. While portions of some of these routes either have been or are still planned to be improved to freeway standards, most will remain as highways during the planning period. The Plan was adopted prior to the completion of State Route 65 through to Roseville, although the Wheatland Bypass has not been constructed. The Marysville Bypass on State Route 70 is now in the planning stages. A number of new routes are proposed in the Plan that have never been constructed. For additional *Circulation Element* discussion, see Section 12.0.

The *Housing Element* (adopted 1991) is discussed in Section 11.0 of this document.

The *Noise Element*, adopted in 1980, notes that noise exposure information contained in this plan guides the development of the *Land Use Element*, the *Circulation Element*, and noise ordinances. Noise sources considered by the element include highways, railroads, airports and industrial plants. The general goal of the *Noise Element* is to protect the lives and property of the citizens of Yuba County from hazardous and annoying noise. The element also states that the intent of noise compatible land use planning is to:



- maintain those areas deemed acceptable in terms of noise exposure
- protect those areas deemed to be noise sensitive from the intrusion of incompatible noise generating sources
- zone specific areas of the county into "manufacturing" and "industrial" districts and locate major noise generating sources in these districts

For additional discussion of the *Noise Element*, see Section 6.0.

The *Seismic Safety and Safety Elements* were adopted in 1980. According to the *Seismic Safety Element*, application of this element to specific land use decisions should be made on a case-by-case basis, when more detailed geologic investigations are undertaken. It is noted that, although most of Yuba County is rated low in terms of seismic risk and damage, the potential effects of seismic activity should be taken into consideration in the planning process. The purpose of the *Safety Element* is to introduce safety considerations in the planning process in order to reduce loss of life, injuries, damage to property, and economic and social dislocation resulting from fire, flooding and other potential safety hazards.

With the exception of the *Noise Element*, all of the existing *General Plan* elements make reference to a Marysville Dam project and reservoir. The *Land Use Element* sets aside 21,000 acres for the facility. According to the *Safety Element*, the project, consisting of a 900,000 acre-foot reservoir near Smartville, once authorized for construction by the Corps of Engineers, has since been reevaluated.

The *Noise, Seismic Safety and Safety Elements* are not being updated as part of the *General Plan Update*. However, it may be necessary for the County to adopt some minor amendments to these elements following preparation of the updated *Land Use, Circulation, Open Space and Conservation Elements* in order to maintain consistency among the elements, as required by State law.

19.2 PRESENT COUNTY LAND USE CONTROLS

County land use controls include the *General Plan* (especially the *Land Use Element*), the *Zoning Ordinance*, *Subdivision Ordinance*, *Building Code*, and *improvement standards*. The codes, ordinances and standards are used to implement the policies and provisions of the *General Plan*.



Zoning Ordinance

The stated purpose of the Yuba County Zoning Ordinance is as follows:

- (a) To foster a workable relationship among land uses.
- (b) To ensure that public and private lands ultimately are used for purposes which are appropriate and most beneficial for the county.
- (c) To prevent excessive population densities within one area.
- (d) To protect the character and the social and economic stability of agricultural, residential, commercial, industrial, recreational, and other areas within the county, and
- (e) To implement the goals, policies and map of the General Plan.

The Zoning Ordinance consists of a zoning map and various districts which apply within the unincorporated area and regulates land uses, restricts population densities, specifies minimum lot sizes, permitted uses and location of structures, determines areas and dimensions of sites, provides standards for off-street parking and loading facilities, and establishes other standards.

According to the *Housing Element*, zoning is the primary means of implementing the *Land Use Element*. The Zoning Ordinance has eleven zones that allow residential development, as well as two agricultural zones (with subzones), two commercial zones, three industrial zones, four open space/recreational zones, a Planning Reserve zone, Airport zone, Beale Air Force Base zone, and a Specific Plan-East Linda zone.

Zoning is required by State law to be consistent with the adopted *General Plan*. When the *General Plan Update* is completed, it may be necessary to create additional zoning districts and rezone areas to achieve consistency with the updated Plan.



Subdivision Ordinance and Improvement Standards

The Subdivision Ordinance also implements the objectives established for development of the county in conformance with the *General Plan* and incorporates standards for health, sanitation and safety in the construction and installation of streets, roads, highways, public utilities and other public and private improvements for proposed subdivisions of land. Proposed subdivisions must comply with ordinance requirements and standards for road widths, road alignments, lot-size, drainage facilities, and means of ingress and egress, and must provide for flood, subsidence and erosion control.

Road improvement standards are related to the street classification. Five types of roads are defined in the Subdivision Ordinance: private roads, cul-de-sac, minor streets (residential ways), collectors and major roads. If additional or different classifications are included in the updated *Circulation Element* of the *General Plan*, or classifications are changed or renamed, the Subdivision Ordinance should be amended to reflect those changes.

The Subdivision Ordinance also establishes standards for connection to community sewer and water systems. Any change in County policy in that regard which is included in the updated *Land Use Element* should also be reflected in an amendment to the Subdivision Ordinance. The Subdivision Ordinance is also where the County "Quimby Ordinance" is located, a requirement for the dedication of land or in-lieu fees for parks in conjunction with subdivision approval.

19.3 SPHERES OF INFLUENCE

A "sphere of influence" is defined in State law as a plan for the probable ultimate physical boundaries and service area of a local agency, as determined by the Local Agency Formation Commission (LAFCO). Yuba County LAFCO is an independent commission, staffed by the County, charged with the discouragement of urban sprawl and the encouragement of the orderly formation and development of local agencies based upon local conditions and circumstances. Its membership is composed of two members of the Board of Supervisors, two members representing the cities of Marysville and Wheatland, and one public (at-large) member.

LAFCO adopts and maintains spheres of influence for the two cities and for all the special districts in the county, with the exception of school districts. District



boundaries and city limits are inside or, in some cases, the same as the sphere boundaries. Annexations to cities or districts must be consistent with (i.e. within) the sphere of influence.

In determining the sphere of influence of a local agency, LAFCO considers the following criteria:

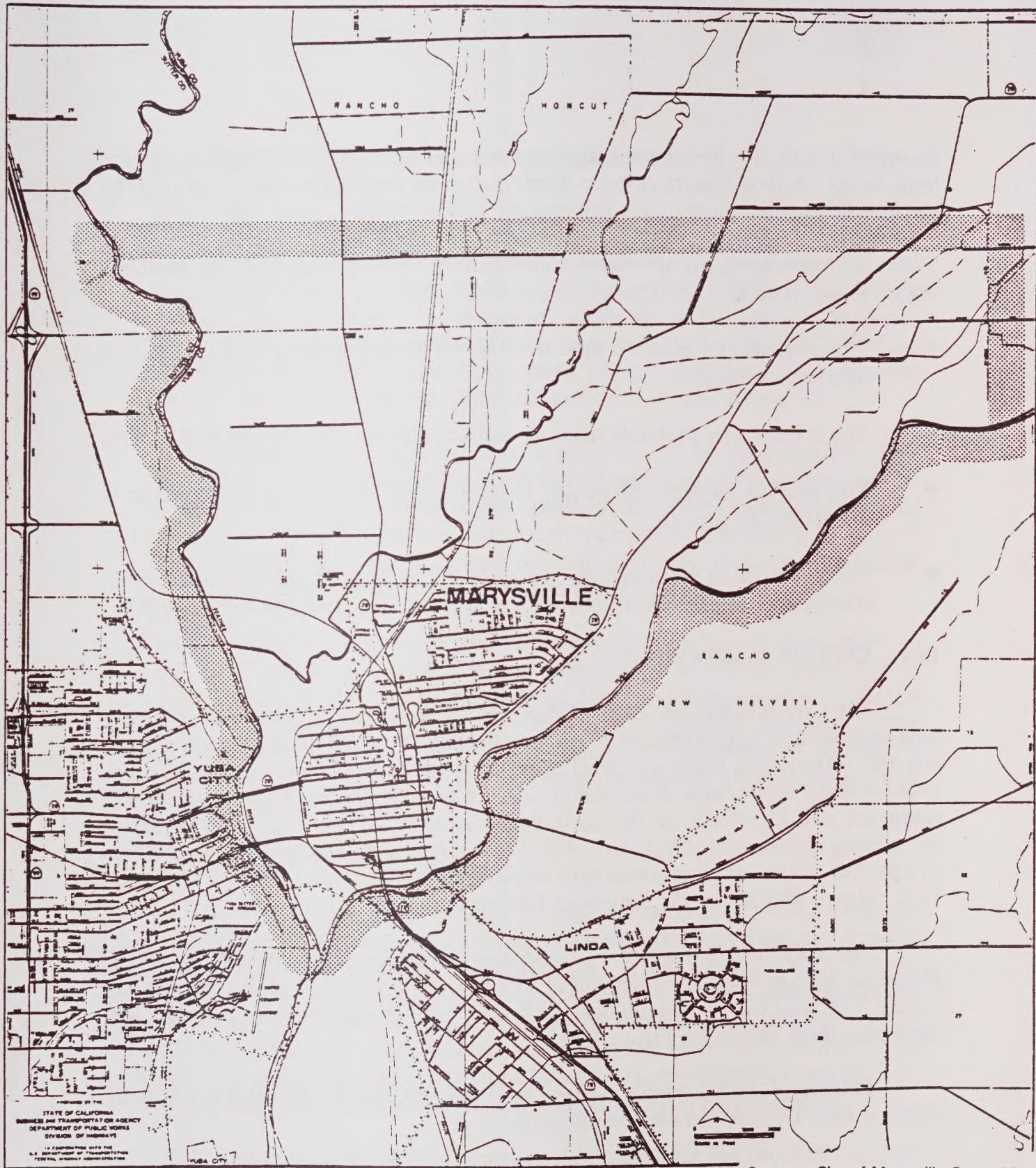
- The present and planned land uses in the area, including agricultural and open-space lands.
- The present and probable need for public facilities and services in the area.
- The present capacity of public services which the agency provides or is authorized to provide.
- The existence of any social or economic communities of interest in the area. (Guide to Cortese/Knox Local Government Reorganization Act of 1985).

19.4 CITY OF MARYSVILLE

The City of Marysville *General Plan* was adopted in 1985. The City's planning area encompasses approximately 10,000 acres located both within the 1985 city limits and the surrounding unincorporated area. The planning area is bounded by the Feather River on the west, Hallwood Boulevard on the east, the Yuba River on the southeast, and Ellis Road on the north (see Figure 19-1). Most of the area within the existing city limits is developed. The *General Plan* applies land use designations to a portion of the unincorporated area within the planning area, as shown on Figure 19-2. Figure 19-3 shows the Sphere of Influence adopted for the City.

The City is in the process of adopting a specific plan, entitled the *North Marysville Specific Plan*, for a portion of the planning area north of the existing city limits. The land use and circulations designations of this Plan, when adopted, will supersede those shown on Figure 19-2.

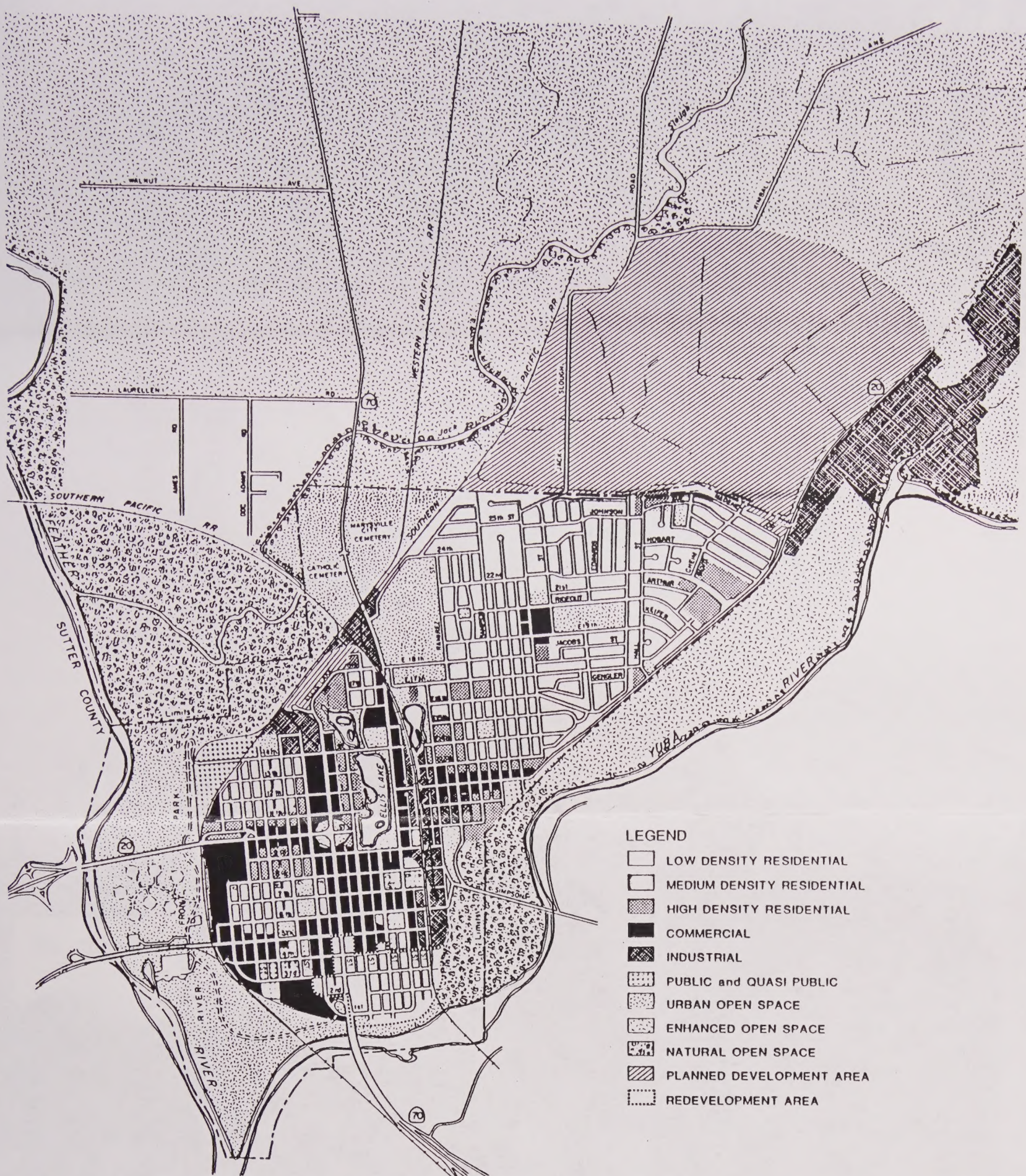
Policies of the Marysville *General Plan* that are relevant to the Yuba County General Plan Update include the following:



QUAD

MARYSVILLE PLANNING AREA

FIGURE
19-1



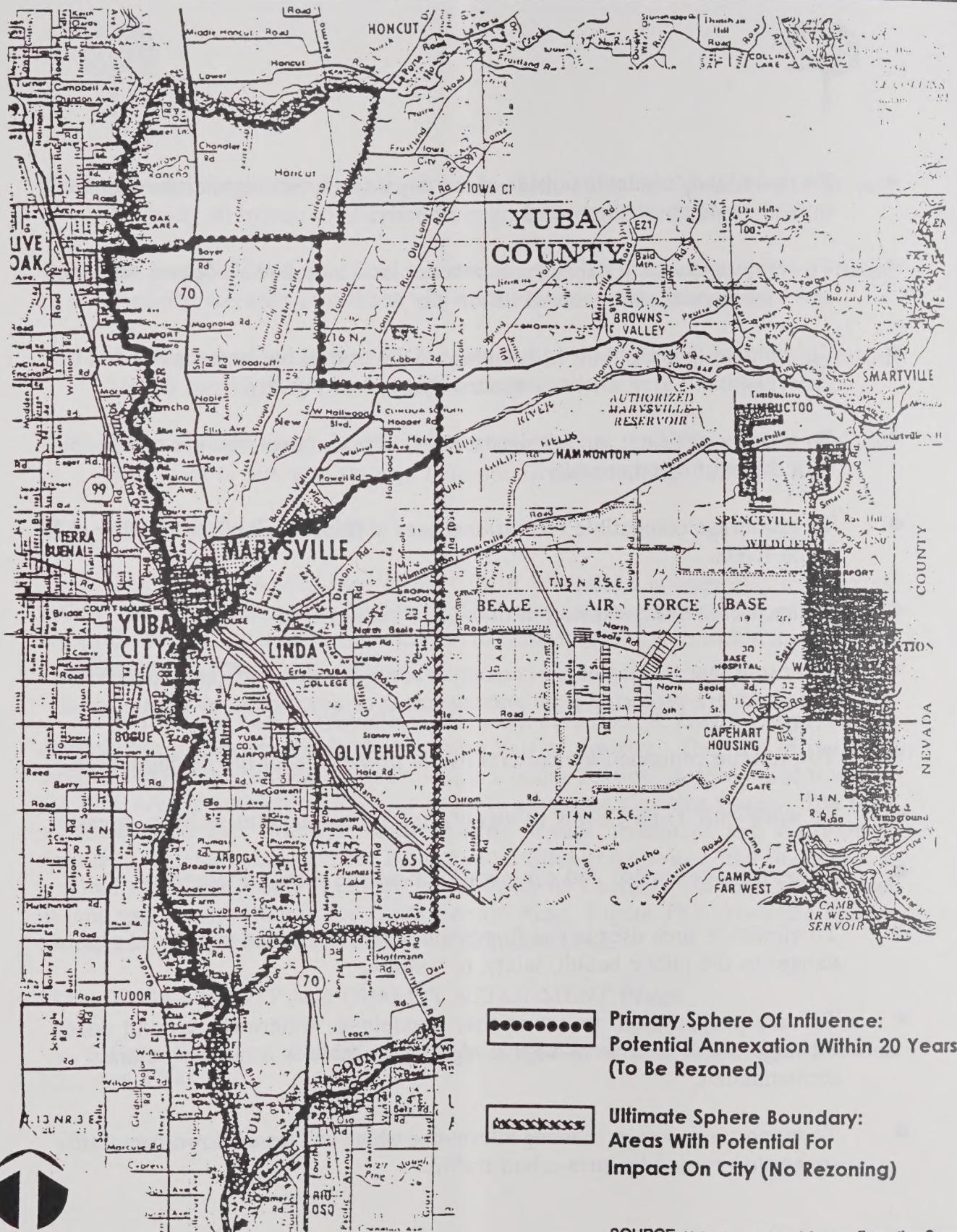
LEGEND

- LOW DENSITY RESIDENTIAL
- MEDIUM DENSITY RESIDENTIAL
- HIGH DENSITY RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- PUBLIC and QUASI PUBLIC
- URBAN OPEN SPACE
- ENHANCED OPEN SPACE
- NATURAL OPEN SPACE
- PLANNED DEVELOPMENT AREA
- REDEVELOPMENT AREA



0' 2500' 5000'

Source: City of Marysville General Plan, August 1985



SOURCE: Yuba County Local Agency Formation Commission



- To make lands available outside of the city limits for residential development only upon demonstrated need.
- To retain and renew existing commercial land uses and designate sufficient new commercial area to meet future city needs.
- To promote the retention and renewal of the central business district and the redevelopment area as the commercial center of the city.
- To provide sufficient land designated for industrial uses that are compatible with the existing community.
- To encourage compatible recreational uses in floodplains of the Feather and Yuba rivers.
- To encourage the preservation of wildlife habitat areas.
- To ensure that existing natural resources areas, scenic areas, open space areas and parks are protected from encroachment or destruction by development.
- To promote continued agricultural use of prime soils in the planning area.
- To work with Yuba County to identify and protect aquifer recharge areas.
- To permit open space and conservation land use within floodplains.
- To eliminate such uses in the floodplain where continued use would pose a danger to the public health, safety, or welfare.
- To take proper steps to assure that floodplains, waterways, ground water recharge areas, and areas with a high water table will not be polluted or contaminated.
- To support a new river crossing alternative which will lessen downtown traffic congestion caused by intra-urban traffic.



- To encourage the study of a north-south Highway 70 and an east-west Highway 20 bypass to alleviate through automobile and truck traffic.
- To prohibit development along stream channels that would reduce stream capacity, increase erosion, or cause deterioration of the channel.
- To require noise buffering or insulation in new development along major streets and highways, and along railroad tracks.
- To encourage the study of a north-south Highway 70 and east-west Highway 20 bypass to alleviate through automobile and truck traffic noise.

19.5 CITY OF WHEATLAND

The current *General Plan* of the City of Wheatland applies only to the area within the Wheatland city limits. The City is beginning the process of comprehensively updating its *General Plan* to encompass the area within their Sphere of Influence, as amended in 1992.

In 1990, the City of Wheatland adopted a *1995 Specific Plan* for large, vacant developable properties within the northern half of the city. The title of the Plan indicates the time framework within which a major portion of development within the Plan area is anticipated to occur or be in advanced planning stages. The Plan addresses land use, drainage, water system, sewage treatment and distribution systems, access/circulation, other municipal facilities and services, and financing. It is noted that some properties along the Highway 65 Corridor will require a change in land use classification in the City's *General Plan*. Figure 19-4 shows the Sphere of Influence proposed for the City as of February 1992.

19.6 YUBA COUNTY AIR QUALITY ATTAINMENT PLAN

For a discussion of the *Yuba County Air Quality Attainment Plan* see Sections 3.2.3 and 3.2.4.



19.7 SOLID AND HAZARDOUS WASTE PLANNING

Yuba County Hazardous Waste Management Plan

The draft *Yuba County Hazardous Waste Management Plan* (CHWMP), when adopted, will serve as the primary planning document for the management of hazardous waste in Yuba County. It includes an analysis of the hazardous wastes produced in the county; a description of existing hazardous waste facilities that treat, recycle and dispose of hazardous wastes produced in the county; an analysis of the potential for recycling hazardous waste and for reducing the volume and hazard of wastes at the source of generation in the county; a description of the need to manage small volumes of hazardous waste produced by most businesses and households; a determination of the need for additional hazardous waste facilities to safely manage the county's hazardous waste stream, an identification of general areas for new off-site commercial hazardous waste facilities determined to be needed; a statement of goals, policies and objectives for the siting of hazardous waste facilities and management of hazardous wastes; an implementation plan that will ensure that the county's goals, objectives and policies are implemented to allow for the proper management and disposal of the county's waste; and siting criteria to be utilized in selecting sites for new hazardous waste facilities. The CHWMP is intended to provide a system for enabling the siting of hazardous waste management facilities in such a manner as to protect public health, safety and the environment, and maintain the economic viability of Yuba County and the State of California.

Drafted in 1988, the Plan has not yet been adopted by the County or approved by the State Department of Health Services (DHS). State law requires counties, within 180 days following approval of the CHWMP, to either incorporate the applicable portions of the Plan by reference into the County's general plan, or enact an ordinance requiring all applicable zoning, subdivision, conditional use permit and variance decisions to be consistent with the siting portion of the CHWMP.

Policy statements relevant to the *Land Use, Circulation, Open Space and Conservation Elements* from the CHWMP include the following:

- To reduce the need for additional hazardous waste disposal sites.



City of Wheatland
SPHERE OF INFLUENCE



- To promote regional cooperation between Yuba County and its adjacent County neighbors in the siting of hazardous waste facilities and management of hazardous wastes. Because of the geographic proximity of Yuba City (Sutter County's major urban area) to Marysville (Yuba County's major urban area), regional cooperation between Yuba and Sutter Counties is especially important; less critical, but also important is the need to develop avenues of cooperation between Yuba and Butte, Nevada, Placer, Plumas and Sierra Counties.
- Provide for the siting of at least one hazardous waste transfer station in the Marysville/Yuba City area. Because of the close interconnection between these two major urban areas and the proximity of these two cities to the major hazardous waste generator for both Yuba and Sutter Counties, a single transfer station to serve the Yuba/Sutter bi-county area should suffice. To facilitate the siting of the bi-county transfer station, an inter-county agreement should be developed clarifying the roles and responsibilities of each County in the siting and management of the transfer station.
- A proposed facility shall not be approved that exceeds the County's hazardous waste management needs if it can be demonstrated that there are appreciably increased public health and/or environmental risks associated with the larger facility.
- Carry out Plan implementation tasks required by AB 2948. These include necessary revisions to County and City General Plans to ensure consistency between these documents and the Hazardous Waste Management Plan; similarly, the enactment of ordinances to require that all applicable zoning, subdivision, conditional use permits and variance decisions be consistent with the Hazardous Waste Management Plan's siting criteria.

The Plan also includes siting criteria for hazardous waste management facilities. In addition to criteria established in State law, the Yuba County CHWMP includes the following unique criteria:

- Reservoirs used to store drinking water and their corresponding watersheds are excluded as potential areas for facility siting.



- No residuals repositories shall be located in dam failure inundation areas or areas protected by levees.
- Hazardous waste facilities should not be located within 10,000 feet in any direction from any runway used by jet aircraft, or within 5,000 feet of any airport used only by piston-type aircraft.

General candidate areas for potential transfer, treatment and storage facilities were chosen due to the absence of constraints that would exclude areas from facility siting and because of their proximity to major transportation corridors and waste generators. Field reconnaissance, however, was not performed to confirm the suitability of these areas for potential facilities. The developer has the burden of proof in identifying appropriate sites, must perform a risk assessment to demonstrate that a facility would not pose a significant threat to the public health, and an environmental impact report must be produced to identify any significant impacts on the environment. The Plan determined that the industrial areas in and around Marysville and the foothill corridor offer the greatest opportunity for facility siting. Specifically, the Plan identifies candidate areas close to urban areas that are potentially suitable for transfer, treatment and storage facilities. The Plan further identifies candidate areas for a residuals repository at a greater distance from urban centers. Areas potentially suitable for hazardous waste facilities are shown in Figure 19-5.

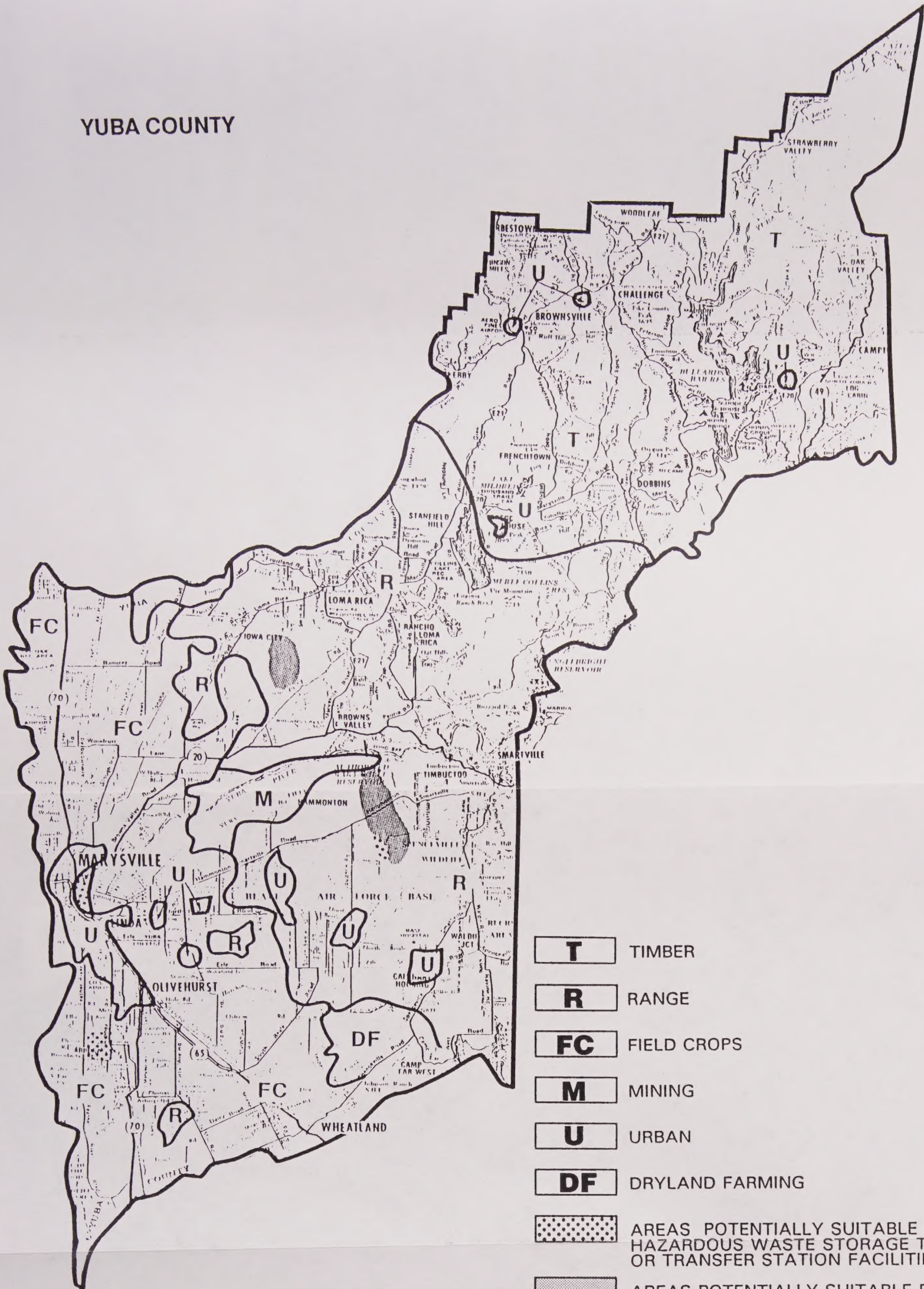
Solid Waste Management

Refer to Section 18.3 for a discussion of solid waste management planning.

19.8 COMPREHENSIVE AIRPORT LAND USE PLANS

The Sacramento Area Council of Governments (SACOG) is the Airport Land Use Commission (ALUC) for Yuba County. The ALUC is responsible for preparing and implementing comprehensive land use plans (CLUPs) for the area around the Yuba County Airport, Brownsville Aero Pines Airport and Beale Air Force Base in Yuba County, in accordance with Public Utilities Code Section 21675. As part of these plans, the Commission may develop building height restrictions, specify land uses, and determine building standards within the airport planning areas.

YUBA COUNTY



Source: Yuba County Hazardous Waste Management Plan, draft, 1988



These plans determine the criteria which the ALUC uses in evaluating general and specific plans, zoning ordinances and building regulations. Proposals for the adoption or amendment of city or county general and specific plans, zoning ordinances, building regulations, and airport master plans which apply within areas of influence identified for each airport are referred to the commission prior to final action by the appropriate governing body (City Council or Board of Supervisors).

These plans present policies addressing land use compatibility with the airports' noise, airspace protection, safety and general nuisance impacts. Standards and criteria are necessary to ensure that no new land use or expansion of an existing land use is permitted within any part of an airport's area of influence which may result in a hazard to aircraft using the airport or any aircraft-related hazard to the health or safety of persons on the ground. Standards also address lands needed for airport facilities and airport-related land uses. The ALUC has no authority to enforce removal of pre-existing land uses which do not conform to the criteria and standards outlined in these documents.

The ALUC has adopted a *Policy Plan* (1988) to serve as the basis for the preparation of CLUPs for all public use airports within its jurisdiction. Until such time as a specific CLUP is prepared for an airport subject to ALUC law, this Plan serves as the basis for determining the consistency of general plans, specific plans, zoning ordinances and building standards subject to review by the Commission. The Plan establishes general policies, planning boundaries, and land use compatibility guidelines for noise and safety. The land use compatibility guidelines for noise and safety are currently proposed for revision. The revised safety guidelines include a more detailed listing of land uses and more restrictive standards in the approach-departure zone. The revised noise guidelines also incorporate more detailed land use categories and revised noise standards (Peter Hill, Planning Manager; David Boyer, Associate Planner, SACOG, pers. comm., November 1992).

Yuba County Airport

There is currently no adopted CLUP for the Yuba County Airport. A draft CLUP has been completed that will be considered for adoption in late May 1994. The general policies, planning boundaries, and land use compatibility guidelines for noise and safety contained in the ALUC *Policy Plan* apply to the Yuba County Airport. As noted above, the noise and safety guidelines are currently under revision.



The *Yuba County Airport Master Plan* was adopted by Yuba County in 1986 as a 20-year plan for the development of Yuba County Airport. The conclusions of the Plan are as follows:

- The Yuba County Airport is a transport general aviation airport whose airfield and navigational facilities are superior to those at most airports in the north state and should accommodate the Airport's needs within the 20-year planning horizon. The Airport has developed these facilities by marketing surplus Airport properties and using the receipts to match State and federal grants for Airport improvements. In addition to financing Airport improvements, the development of surplus Airport property has encouraged companies from across the nation to locate in the industrial parks adjacent to the Airport. Therefore, while its primary purpose is to service aviation needs, the Yuba County Airport has assumed an additional role in the economic development of the area.
- General aviation activity at the Airport is anticipated to continue to increase over the next 20 years. In addition, the increase in commuter air carrier demand is expected to make air carrier operation at the Airport viable again in the next 5 years. The aviation demand at the Yuba County Airport is based on the forecasts of population and economic growth in the surrounding Yuba County area. Since the only constraint to growth at the Airport appears to be the economic health of the surrounding area, improvement of this economic health could result in aviation activity growth that is greater than that predicted.
- Since 1976, the Airport has gradually improved operations so it has become profitable to Yuba County. This is projected to continue in the future. However, the limited amount of operational revenues combined with the burden of providing intangible benefits of economic development could adversely affect future Airport growth.



- Over the next 7 years, Airport operating revenues will be dependent on income from the lease or sale of industrial land. For the Airport to continue to be profitable, development of the industrial land must continue. Existing constraints on utility availability for industrial development will therefore directly affect Airport finances in addition to areawide economic health.
- The environmental impacts associated with existing and projected aviation operations and recommended development and construction activities are not considered major, and in most cases are only temporary.

The *Master Plan* makes the following recommendations:

- Provide a commuter air carrier terminal as shown on the terminal area plan.
- Make improvements and repairs to airfield facilities recommended in this Plan, including lighting for Taxiway C, repairs to ramps and taxiways, and extension of the commercial apron.
- Plan for an extension of the main runway and construction of a parallel runway.
- Pursue funding for and make repairs to the cross wind runway.
- Plan for terminal area improvements including additional T-hangars and tiedowns, new CFR and maintenance buildings, and revised roadway circulation improvements.
- Pursue additional waste treatment and water supply capacity for Airport industrial uses.
- Require construction of an aircraft washdown pad by agricultural operators.



- Adopt lease policies, Master Lease Map, Capital Improvements curve, and revise lease rates.
- Establish reserve from land sales from which to fund Airport operating expenses. In addition, Airport capital improvements should maximize Airport operating expenses.
- Fund a full-time Airport Manager position.

Beale Air Force Base

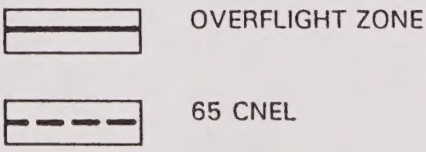
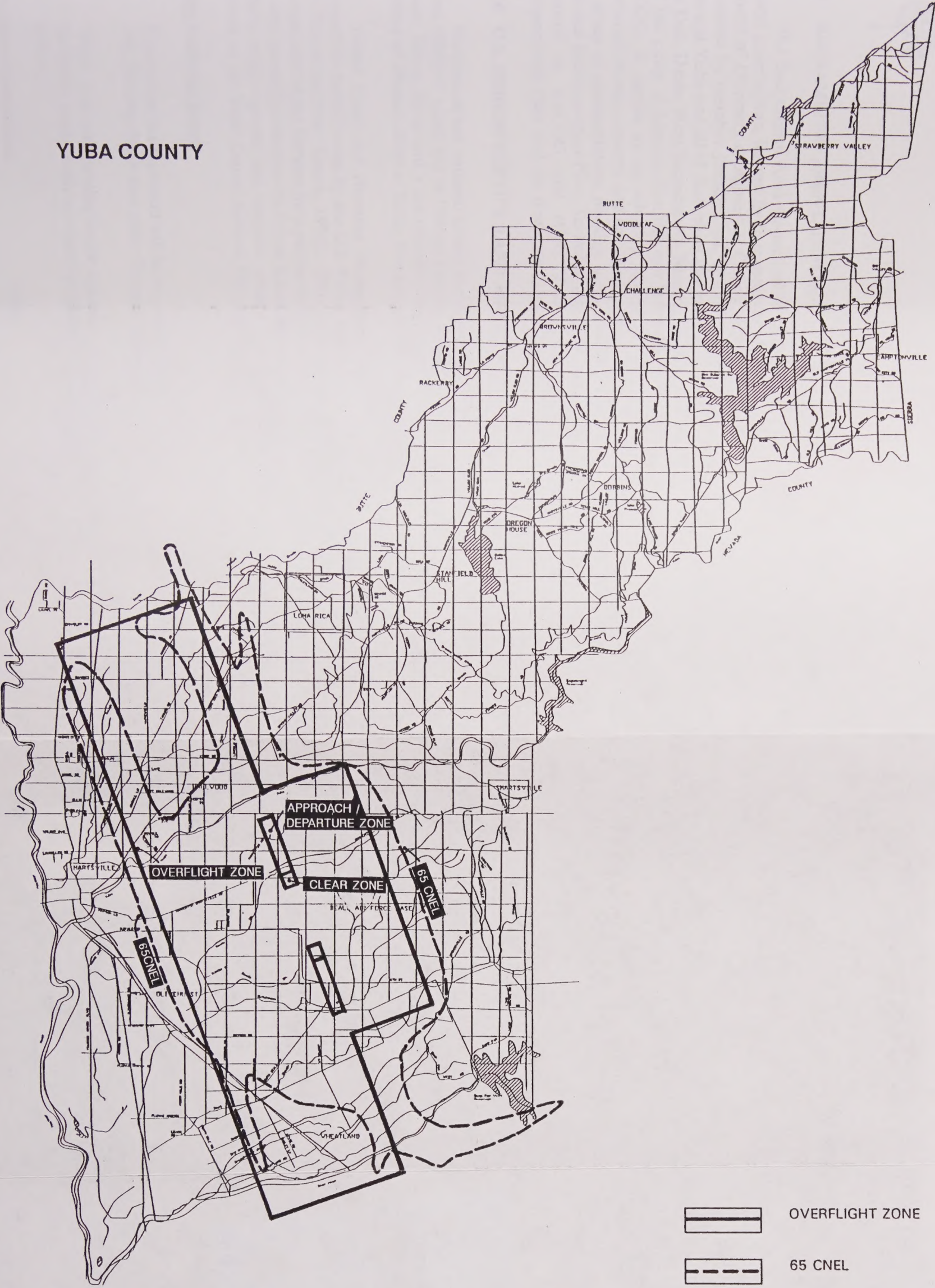
The *Beale Air Force Base Comprehensive Land Use Plan* (CLUP)(1986) establishes planning boundaries for the airbase (Figure 19-6) and provides a comprehensive plan for land use that defines compatible types and patterns of future land use, based on noise and safety. The land use compatibility guidelines for noise and safety contained in the CLUP are in the process of being revised to establish more detailed land use categories and more restrictive standards in the approach-departure zone. Noise-related policies are discussed in Section 6 of this document. These compatibility guidelines should be taken into consideration when updating the *Land Use* and *Open Space* elements of the *General Plan*. The CLUP recommends that the cities of Marysville and Wheatland and the County include the ALUC-adopted policies in their respective general plans and other land use controls.

Beale AFB is currently undertaking an Air Installation Compatible Use Zone (AICUZ) study. The results will be forwarded to SACOG for use in updating the CLUP (Dennis Bruner, Beale Air Force Base, pers. comm., August 1992).

Brownsville Aero Pines Airport

The *Brownsville Aero Pines Airport Comprehensive Land Use Plan* was adopted in 1990 to establish planning boundaries for the Airport and provide a comprehensive plan that defines compatible types and patterns of future land use. No master plan or airport layout plan exists for the Airport. The land use compatibility guidelines for safety contained in the CLUP are proposed for revision to provide greater detail in the land use categories.

YUBA COUNTY



Source: Beale Air Force Base, Comprehensive Land Use Plan, First Draft, May 1986



19.9 SACRAMENTO AREA COUNCIL OF GOVERNMENTS

The Sacramento Area Council of Governments (SACOG) is an association of local governments formed by four counties and fourteen cities. It is governed by a Board of Directors composed of County Supervisors and City Council members appointed by member jurisdictions. It serves the counties of Sacramento, Sutter, Yolo and Yuba and all of their cities (Sacramento, Folsom, Galt, Isleton, Yuba City, Live Oak, Davis, West Sacramento, Winters, Woodland, Marysville and Wheatland) and the cities of Lincoln, Rocklin and Roseville in Placer County. According to SACOG, it serves as an advisory agency to local government on matters of interjurisdictional concern, and has developed a comprehensive planning program in the areas of transportation, housing, water quality, land use and air quality (1992 *Regional Transportation Plan*, Technical Appendix, foreword). Planning documents prepared by SACOG that affect Yuba County include the 1992 *Regional Transportation Plan* and the *Beale Air Force Base Comprehensive Land Use Plan*.

19.10 U.S. FOREST SERVICE LAND MANAGEMENT PLANS

Portions of two national forests are located in Yuba County: Plumas National Forest (80% of which lies in Plumas County, and encompassing portions of Plumas, Lassen, Sierra, Butte and Yuba counties) and Tahoe National Forest (encompassing portions of Plumas, Sierra, Yuba, Nevada and Placer counties).

Forest Land and Resource Management Plans (Forest Plans) have been prepared for both Forests by the U.S. Forest Service (Plumas National Forest, 1988, and Tahoe National Forest, 1990). The purpose of these Plans is to direct the management of the Forests for a period of 10 to 15 years. Their goals are to ensure the wise use and protection of Forest Resources, fulfill legislative requirements, and address local, regional and national issues. The goals for each Forest which are relevant to the *Yuba County General Plan* are summarized below.

Tahoe National Forest

- Recreation management will be in concert and cooperation with appropriate city, County, State and other Federal agencies.
- Work with cooperating water agencies and irrigation districts to maintain desirable water levels on reservoirs through the entire length of the recreation season.



- Develop a Scenic Byway program on the Forest that provides a wide range of scenic and recreation opportunities combined with opportunities to interpret an array of resource management activities and historic sites. As an integral part of this program, work with County government, State agencies such as Caltrans and State Parks, and other interested groups to identify and nominate potential routes.
- Emphasize economic uses of TNF resources, including timber harvesting, mining, and grazing that are compatible with other resource and amenity values.
- Acquire non-Federal lands or interests in non-Federal lands to improve the management of Tahoe National Forest System land.
- Identify Federal lands suitable for land exchange to improve the management of the Tahoe National Forest.
- Consider TNF lands as available for intermingled and adjacent landowners' use only if appropriate and compatible with National Forest purposes.
- Manage National Forest system lands in Urban/Rural/Wildland interface situations with a commitment to work with private landowners and other agency neighbors to resolve possible conflicts while continuing to provide a wide range of multiple use goods and services.
- Emphasize coordination with other major landowners to use opportunities for mutual investments and programs to enhance protection or outputs from adjacent lands.
- Coordinate with local government agencies to protect and enhance TNF resources.
- Develop an efficient and environmentally sound transportation system that provides access to TNF lands and appropriate access to private lands.



Plumas National Forest

- Adjust burning programs and other Forest activities as needed so that Federal, State, and local air pollutant standards are not violated.
- Accomplish ownership adjustments that maintain total timber productivity and that consolidate PNF lands within the Forest boundary, conform to the PNF Wild and Scenic River Acquisition Plan, or result in acquisition of Threatened or Endangered Species habitat, Wild Trout Stream watershed, critical deer range, essential watering sources on range allotments, or areas crucial to recreation management.
- Designate those Forest lands suitable for disposal, particularly those essential to community expansion.
- Transfer to the counties maintenance responsibility for routes serving subdivided private lands.
- Acquire lands where needed to improve range condition on existing Forest landbase.
- Maintain [grazing] use in open-range areas where land subdivision is occurring.
- Encourage growth of privately-operated facilities serving public needs.
- Complete acquisition of Wild and Scenic River lands and easements.
- Improve and expand developed facilities and trails to meet demand while reducing unit costs and protecting other resources.

See Section 5.8 for additional discussion of timberlands.

19.11 STATUS OF SURROUNDING COUNTY GENERAL PLANS

Six counties border Yuba County: Sutter, Nevada, Butte, Sierra, Plumas and Placer counties. All but Plumas County are currently in the process of updating their respective general plans. While a neighboring county's General Plan may not have



a direct impact on Yuba County, certain issues and topics addressed in a general plan are regional in nature and may affect resources and infrastructure on the other side of a county boundary line. Examples of this include air quality, transportation and circulation, waterways which flow from one county to another, and planned land uses along the county boundary. The greatest impacts on Yuba County probably result from actions in Sutter County (connected to the west by two bridges across the Feather River); there are many bi-county agencies and organizations such as the Yuba-Sutter Chamber of Commerce and the Feather River Air Quality Management District. Nevada County to the east, Placer County to the south, and Butte County to the north, all connected by State highways, also impact Yuba County. Counties are required by law to notify other counties of proposed General Plan amendments. The concurrent general plan update process by most of the counties offers an excellent opportunity to coordinate the counties' planning efforts and become aware of issues, opportunities and constraints in the adjacent counties.

19.11.1 Sutter County

Sutter County is in the process of comprehensively updating its *General Plan*. This planning process is being undertaken jointly with the City of Yuba City. The update process is being undertaken in two phases. Phase 1 consists of making technical corrections to the existing Plan, reformatting it to consolidate all goals and policies into a single document, and making the entire text of the Plan internally consistent and consistent with the Land Use Diagram. A new Background document is being prepared that should be completed in draft form around the beginning of June 1994. Phase 2 will consist of re-examining the Plan from a land use perspective after Phase 1 tasks are completed to determine what still needs to be updated. Community workshops will be held to receive public input. No target date has been set for completion (Peter Bridges, Principal Planner, Sutter County Planning and Community Services Department, pers. comm., May, 1994).

The existing *General Plan*, adopted in 1983, contains the following policies relevant to the County of Yuba:

- Expand the role of the Bi-County Solid Waste Management Committee to be responsible for policy and program development including, but not limited to:
 - updating and revising the existing Bi-County Solid Waste Plan.



- developing a recycling program that would include the feasibility of a curbside pick-up system.
 - developing a public education program that would promote recycling, proper disposal of hazardous household materials (motor oil, cleaning agents, paints, solvents, etc.) and consumer awareness of product packaging and its relationship to waste generation.
 - studying the feasibility of using waste as an alternative energy source for local agriculture and industry.
- Establish a Joint Powers Agreement among the two counties and four cities in order to have a coordinated, unified waste disposal and utilization program.

The County of Sutter has recently adopted a large-scale General Plan Amendment for the South Sutter County area, encompassing approximately 25,000 acres located immediately north and west of the Sacramento and Placer County boundaries, respectively. The western boundary is formed by the Sacramento River and the northerly border is the Natomas Cross Canal. The planning area is divided into four "new towns," with each town characterized by a town center of mixed, high-intensity urban land uses. Outlying portions of the town areas provide for lower density residential areas supported by mixed-use village centers and other supporting land uses such as schools, churches and parks (*South Sutter County General Plan Amendment, Draft Environmental Impact Report*, July 1991).

19.11.2 Nevada County

The Nevada County Board of Supervisors initiated a comprehensive update to the 1980 *Nevada County General Plan* in February 1990. To date, a number of technical reports have been prepared to serve as a basis for the Plan update and EIR. The next steps were the selection by the Board of Supervisors of draft goals and objectives and a preferred land use alternative, which guided the preparation of a *Preliminary Draft General Plan*. As of May 1994, Final Drafts of the Plan text and land use maps had been completed, and public hearings on the *General Plan* EIR had just begun. The County hopes to certify the EIR in summer 1994 and adopt the



updated *General Plan* in late fall 1994 (Sharon M. Boivin, Planner II, Nevada County Planning Department, pers. comm., September 1992 and May 1994).

Draft policy statements that are relevant to Yuba County include the following:

- Coordinate with cities, Nevada County Transportation Commission, adjacent counties and Caltrans for the development of an integrated regional circulation system.
- Identify regional [air quality] impacts and coordinate with other agencies to achieve attainment.

19.11.3 Butte County

Butte County is also comprehensively updating its *General Plan*, a process begun in January 1991. To date, completed products include a *General Plan Update Options Report*, *General Plan Background Report*, and *Issues and Options Report*. The release of a *Draft General Plan Policy Document*, based on direction received from the Board of Supervisors will be followed by preparation and circulation of a *Draft General Plan* and *Draft EIR*, and finally Plan adoption and Final EIR certification. According to County officials, the Plan Update had been set aside for a period, pending a decision on the level of citizen participation necessary and desirable to complete the General Plan Update process (Bettye A. Kircher, Director of Planning, Butte County Planning Department, pers. comm., September 1992).

As of May 1994, the target date for completion of a *Draft General Plan* was December 1994. Hearings would be held around the beginning of 1995 on the *Draft General Plan*. All mandatory elements would be included in the Draft. An Agricultural Element is being prepared separately, with hearings expected in summer 1994 (Tom Last, Senior Planner, Butte County Planning Department, pers. comm., May 1994).

19.11.4 Sierra County

Sierra County was granted an extension of time from the State Office of Planning and Research to update its *General Plan*. The present *General Plan* has been operative since 1970. During 1991, the County selected a consulting firm and embarked upon a comprehensive *General Plan* update. The seven mandatory



elements were updated. The Plan emphasis is on timber, agriculture and tourism, in a low growth environment.

Public hearings were held on the *Draft General Plan*. The County Planning Commission subsequently reviewed the *Draft General Plan* and recommended revisions to be made by Planning Department staff, which was in progress as of May 1994. Upon completion of revisions, the Plan will be sent to the Board of Supervisors for review and adoption, possibly in August or September 1994. A *Draft EIR* on the Plan was prepared, and a public hearing on the EIR may be held in July or August 1994 (Julie L. Griffith, Planner, Sierra County Planning Department, pers. comm., September 1992 and May 1994).

19.11.5 Plumas County

The *Plumas County General Plan* was adopted in 1984. Plumas County shares a relatively small and remote boundary with Yuba County. There are no policy statements in the Plan that are directly relevant to Yuba County.

19.11.6 Placer County

Placer County is preparing a comprehensive *General Plan Update* as well, initiated in 1991. The County completed and published the *Draft General Plan Background Report* and the *Issues and Options Report* in 1992. The County had already adopted an updated *Housing Element*. Following the public review of these documents, the staff began the process of obtaining direction from the Planning Commission and Board of Supervisors on both the alternatives and policies that would shape the preparation of the General Plan and General Plan EIR (Loren E. Clark, Senior Planner, Placer County Planning Department, pers. comm., September 1992). The *Draft General Plan* and *Draft EIR* have now been completed and final hearings on the Plan update were in progress as of May 1994.



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APPENDICES

INDIRECT SOURCE REVIEW

AIR QUALITY ELEMENT

INTRODUCTION

THIS Air Quality Element addresses the requirements of Government Code Section 65560(b)4, which calls for the establishment of Open Space Plan policies and programs designed to protect "open space for public health and safety, including, but not limited to ... areas required for the protection and enhancement of air quality.

Under existing federal and state air quality laws, the Feather River Air Quality Management District (District) is required to adopt and enforce regulations to achieve and maintain ambient air quality standards. The role of the General Plan in air quality planning is the coordination of air quality goals, land use and transportation planning. A concerted energy planning effort can also produce air quality benefits.

ATTAINMENT STANDARDS AND AIR QUALITY PLANS

The Feather River AQMD (Sutter and Yuba County) is located in the Sacramento Valley Air Basin. The Basin does not attain the state ambient air standards for ozone and particulate matter (PM₁₀).

The California Clean Air Act of 1988 requires the District to prepare plans to attain state air quality standards by the earliest practical date. The Act sets a goal of achieving a 5% per year reduction in emissions until the standards are met. Feather River AQMD is defined as having a "moderate" air quality ozone problem (except the South Sutter area which is classified as "severe") with an attainment goal set for 1994. The District adopted an Air Quality Attainment Plan in August, 1991 that guides the District's efforts to meet the state ozone standard. The attainment plan addresses air pollution controls and management for stationary sources and mobile sources. Included are control measure requirements for indirect and area sources. Indirect sources are development projects which attract motor vehicle traffic. Area sources are small but numerous sources of air contaminants such as consumer products and residential space heating.

Based on the 1987 inventory of emissions, mobile sources accounted for a vast majority of the District's ozone problem. Two chemical classes, namely reactive organic gases (ROG) and nitrogen oxides (NOx), are important precursor chemicals in forming ozone. According to the District's 1987 emissions inventory, mobile sources account for 46% of ROG and 92% of NOx in the Feather River District. The attainment plan is scheduled to be updated during 1994, and progress towards meeting State air quality goals will be measured during that update. If the District does not meet state

ozone standards by 1997, a major revision of the attainment plan is required under State law.

LAND USE AND TRANSPORTATION MANAGEMENT PLANS

Traditional air quality management strategies have focused on controlling new and existing stationary sources in the industrial and manufacturing sectors and by reducing motor vehicles emissions with extensive emission control requirements. While these control strategies have been considered the most effective pollution control methods, growth in the number of emission sources in the Feather River AQMD has had a cumulative effect of offsetting these traditional air quality programs with the result of little net improvement in air quality. As a result, the attainment plan contains a package of strategies that address the air pollution problems created by the use of motor vehicles. Collectively, this package is called Transportation Control Measures (TCM plan or program) and major components, including:

TRANSPORTATION CONTROL MEASURES

1. Areawide Carpool/Vanpool Matching and Assistance
2. Improved Public Transit
3. City or County Trip Reduction Ordinance
4. Traffic Flow Improvements
5. Employer-Sponsored Car/Van/Buspool Programs
6. Staggered Work Schedules, Flexible Work Hours, Compressed Work Week
7. Telecommunications
8. Suburban Park & Ride Lots
9. Jobs/Housing Balance
10. Provision of Bikeways and Bicycling Support Facilities
11. Public Awareness Campaign

The key to the air quality success of these programs is in either increasing the efficient use of motor vehicles or finding desirable substitutes to their use.

It is the objective of the TCM Plan's commuter reduction program to get major employers to reduce commuter vehicle miles traveled (VMT) per employee.

Indirect source review programs involve development projects which generate or indirectly attract mobile air emissions. The objective of an indirect source review Control Measure (ICM) is to reduce indirect sources of emissions from new or modified development projects by reducing the pollution volume or altering the critical time when emissions are released and have the most impact on air quality.

Finally, an important part of the District's air quality planning is accomplished through public information programs about the air

quality benefits associated with using transportation more efficiently.

Closely associated with the District's TCM program is the Congestion Management Plan (CMP). CMPs are a requirement of Proposition 111 adopted by state voters in 1990. The primary goal of the CMP is to find ways to reduce traffic congestion while being consistent with the District's Regional Transportation Plan (RTP) and the attainment plan. As a result, the CMP's transportation management efforts are the same or closely parallel those found in the Air Quality Management District's TCM program.

OBJECTIVES

1. Protect and maintain air quality so as to protect human health and preclude crop, plant and property damage in accordance with Federal and State air quality laws.
2. Meet California clean air standards as soon as practicably possible.
3. Encourage integration of land use, transportation and energy planning efforts which help to reduce air pollution impacts.
4. Recognition that due to mountainous terrain, frequent calm winds, stable and inverted atmospheric conditions and transport of pollutants from the south, the air pollution potential of the Feather River District is high.

POLICIES

1. Feather River AQMD shall strive to meet and maintain all State and Federal air quality standards. A monitoring program shall be maintained which determines the ambient air concentrations of those pollutants that have State or Federal ambient air standards and which have a significant impact on the District's air quality.
2. Land use decisions shall be made with consideration given to the improvement of air quality. New development projects shall be conditioned to mitigate air quality impacts. Mitigation measures for air quality impacts shall be identified and implemented by Planning Agencies through the environmental review and permitting process outlined in the California Environmental Quality Act.
3. Mitigation measures specific to project size and type shall be incorporated by Planning Agencies in each relevant Use Permit. Projects that will produce more than 50 pounds per day of Reactive Organic Gases (ROG) or

ACOUSTICAL TERMINOLOGY

AMBIENT NOISE LEVEL: The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

CNEL: Community Noise Equivalent Level. The average equivalent sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.

DECIBEL, dB: A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the reference pressure, which is 20 micropascals (20 micronewtons per square meter).

L_{dn} : Day-Night Average Sound Level. The average equivalent sound level during a 24-hour day, obtained after addition of ten decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.

L_{eq} : Equivalent Sound Level. The sound level containing the same total energy as a time varying signal over a given sample period. L_{eq} is typically computed over 1, 8 and 24-hour sample periods.

Note: CNEL and L_{dn} represent daily levels of noise exposure averaged on an annual basis, while L_{eq} represents the average noise exposure for a shorter time period, typically one hour.

L_{max} : The maximum sound level recorded during a noise event.

L_n : The sound level exceeded "n" percent of the time during a sample interval. L_{10} equals the level exceeded 10 percent of the time (L_{90} , L_{50} , etc.)

ACOUSTICAL TERMINOLOGY

NOISE EXPOSURE CONTOURS:

Lines drawn about a noise source indicating constant levels of noise exposure. CNEL and L_{dn} contours are frequently utilized to describe community exposure to noise.

SEL OR SENEL:

Sound Exposure Level or Single Event Noise Exposure Level. The level of noise accumulated during a single noise event, such as an aircraft overflight, with reference to a duration of one second. More specifically, it is the time-integrated A-weighted squared sound pressure level for a stated time interval or event, based on a reference pressure of 20 micropascals and a reference duration of one second.

SOUND LEVEL:

The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.

FHWA Model RD-77-108: Brown-Buntin Associates, Inc.
 Calveno Emission Curves Run Date: 08-28-1992
 Project Number: 92-294 Run Time: 11:37:24
 Year: Existing
 Soft Site

INPUT DATA SUMMARY:

Segment	ADT	Day%	Eve%	Nite%	%MT	%HT	Speed	Distance	Offset
1	9800	87.0	0.0	13.0	3.3	5.7	55.0	100.0	0.0
2	9000	87.0	0.0	13.0	2.3	5.5	55.0	100.0	0.0
3	9500	87.0	0.0	13.0	2.3	5.5	55.0	100.0	0.0
4	11200	87.0	0.0	13.0	2.7	3.9	55.0	100.0	0.0
5	10700	87.0	0.0	13.0	2.2	5.3	55.0	100.0	0.0
6	10000	87.0	0.0	13.0	2.2	5.3	55.0	100.0	0.0
7	12200	87.0	0.0	13.0	2.2	5.3	55.0	100.0	0.0
8	23300	87.0	0.0	13.0	2.2	5.3	55.0	100.0	0.0
9	26000	87.0	0.0	13.0	2.2	5.3	55.0	100.0	0.0
10	27500	87.0	0.0	13.0	2.2	5.3	55.0	100.0	0.0
11	34000	87.0	0.0	13.0	2.2	5.3	55.0	100.0	0.0
12	51000	87.0	0.0	13.0	2.2	5.3	55.0	100.0	0.0
13	11500	87.0	0.0	13.0	2.9	6.8	55.0	100.0	0.0
14	10300	87.0	0.0	13.0	2.9	6.8	55.0	100.0	0.0
15	8700	87.0	0.0	13.0	2.9	6.8	55.0	100.0	0.0
16	9000	87.0	0.0	13.0	2.2	3.4	55.0	100.0	0.0
17	8200	87.0	0.0	13.0	2.2	3.4	55.0	100.0	0.0
18	6800	87.0	0.0	13.0	2.2	3.4	55.0	100.0	0.0
19	3900	87.0	0.0	13.0	2.2	3.4	55.0	100.0	0.0
20	5800	87.0	0.0	13.0	2.2	3.4	55.0	100.0	0.0
21	9000	87.0	0.0	13.0	2.5	1.5	45.0	100.0	0.0
22	10200	87.0	0.0	13.0	2.5	1.5	35.0	100.0	0.0
23	4900	87.0	0.0	13.0	2.5	1.5	45.0	100.0	0.0
24	3800	87.0	0.0	13.0	2.5	1.5	45.0	100.0	0.0
25	3000	87.0	0.0	13.0	2.5	1.5	45.0	100.0	0.0
26	3400	87.0	0.0	13.0	2.5	1.5	45.0	100.0	0.0
27	3650	87.0	0.0	13.0	2.5	1.5	45.0	100.0	0.0
28	3650	87.0	0.0	13.0	2.5	1.5	45.0	100.0	0.0
29	1900	87.0	0.0	13.0	2.5	1.5	45.0	100.0	0.0
30	2100	87.0	0.0	13.0	2.5	1.5	45.0	100.0	0.0
31	12200	87.0	0.0	13.0	2.5	1.5	45.0	100.0	0.0
32	12000	87.0	0.0	13.0	2.5	1.5	45.0	100.0	0.0
33	2700	87.0	0.0	13.0	2.5	1.5	45.0	100.0	0.0
34	3300	87.0	0.0	13.0	2.5	1.5	45.0	100.0	0.0
35	8600	87.0	0.0	13.0	2.5	1.5	45.0	100.0	0.0
36	8600	87.0	0.0	13.0	2.5	1.5	45.0	100.0	0.0
37	3200	87.0	0.0	13.0	2.5	1.5	45.0	100.0	0.0
38	7000	87.0	0.0	13.0	2.5	1.5	35.0	100.0	0.0
39	20000	87.0	0.0	13.0	2.5	1.5	35.0	100.0	0.0
40	28320	87.0	0.0	13.0	2.5	1.5	35.0	100.0	0.0
41	17000	87.0	0.0	13.0	2.5	1.5	45.0	100.0	0.0
42	6300	87.0	0.0	13.0	2.5	1.5	45.0	100.0	0.0
43	4700	87.0	0.0	13.0	2.5	1.5	45.0	100.0	0.0
44	9000	87.0	0.0	13.0	2.5	1.5	35.0	100.0	0.0
45	4500	87.0	0.0	13.0	2.5	1.5	35.0	100.0	0.0

FHWA Model RD-77-108: Brown-Buntin Associates, Inc.
 Calveno Emission Curves Run Date: 08-28-1992
 Project Number: 92-294 Run Time: 11:37:28
 Year: Existing
 Soft Site

INPUT DATA SUMMARY:

Segment	ADT	Day%	Eve%	Nite%	%MT	%HT	Speed	Distance	Offset
46	4500	87.0	0.0	13.0	2.5	1.5	35.0	100.0	0.0
47	3600	87.0	0.0	13.0	2.5	1.5	35.0	100.0	0.0
48	16300	87.0	0.0	13.0	2.5	1.5	35.0	100.0	0.0
49	4800	87.0	0.0	13.0	2.5	1.5	35.0	100.0	0.0
50	2000	87.0	0.0	13.0	9.5	16.7	55.0	100.0	0.0
51	1750	87.0	0.0	13.0	9.5	16.7	55.0	100.0	0.0
52	1300	87.0	0.0	13.0	9.5	16.7	55.0	100.0	0.0
53	1100	87.0	0.0	13.0	9.5	16.7	55.0	100.0	0.0

FHWA Model RD-77-108: Brown-Buntin Associates, Inc.
 Calveno Emission Curves Run Date: 08-28-1992
 Project Number: 92-294 Run Time: 11:37:29
 Year: Existing
 Soft Site

NOISE LEVELS:

Level, dB Ldn						
Segment	Distance	Offset	Autos	Med.Trk.	Hvy.Trk.	Total
1	100.0	0.0	63.3	56.0	62.3	66.2
2	100.0	0.0	63.0	54.0	61.8	65.7
3	100.0	0.0	63.2	54.3	62.0	66.0
4	100.0	0.0	64.0	55.7	61.2	66.2
5	100.0	0.0	63.7	54.6	62.4	66.4
6	100.0	0.0	63.4	54.3	62.1	66.1
7	100.0	0.0	64.3	55.2	62.9	67.0
8	100.0	0.0	67.1	58.0	65.7	69.8
9	100.0	0.0	67.6	58.4	66.2	70.3
10	100.0	0.0	67.8	58.7	66.5	70.5
11	100.0	0.0	68.8	59.6	67.4	71.4
12	100.0	0.0	70.5	61.4	69.1	73.2
13	100.0	0.0	63.9	56.1	63.7	67.2
14	100.0	0.0	63.5	55.6	63.3	66.7
15	100.0	0.0	62.7	54.9	62.5	66.0
16	100.0	0.0	63.1	53.8	59.7	65.0
17	100.0	0.0	62.7	53.4	59.3	64.6
18	100.0	0.0	61.9	52.6	58.5	63.8
19	100.0	0.0	59.4	50.2	56.0	61.4
20	100.0	0.0	61.2	51.9	57.8	63.1
21	100.0	0.0	60.6	53.0	55.3	62.3
22	100.0	0.0	58.0	51.9	54.9	60.4
23	100.0	0.0	58.0	50.4	52.7	59.7
24	100.0	0.0	56.9	49.3	51.6	58.6
25	100.0	0.0	55.9	48.3	50.5	57.5
26	100.0	0.0	56.4	48.8	51.1	58.1
27	100.0	0.0	56.7	49.1	51.4	58.4
28	100.0	0.0	56.7	49.1	51.4	58.4
29	100.0	0.0	53.9	46.3	48.6	55.5
30	100.0	0.0	54.3	46.7	49.0	56.0
31	100.0	0.0	62.0	54.4	56.6	63.6
32	100.0	0.0	61.9	54.3	56.6	63.5
33	100.0	0.0	55.4	47.8	50.1	57.1
34	100.0	0.0	56.3	48.7	51.0	57.9
35	100.0	0.0	60.4	52.8	55.1	62.1
36	100.0	0.0	60.4	52.8	55.1	62.1
37	100.0	0.0	56.1	48.5	50.8	57.8
38	100.0	0.0	56.4	50.2	53.2	58.8
39	100.0	0.0	61.0	54.8	57.8	63.3
40	100.0	0.0	62.5	56.3	59.3	64.8
41	100.0	0.0	63.4	55.8	58.1	65.1
42	100.0	0.0	59.1	51.5	53.8	60.8
43	100.0	0.0	57.8	50.2	52.5	59.5
44	100.0	0.0	57.5	51.3	54.3	59.9
45	100.0	0.0	54.5	48.3	51.3	56.8

FHWA Model RD-77-108: Brown-Buntin Associates, Inc.
 Calveno Emission Curves Run Date: 08-28-1992
 Project Number: 92-294 Run Time: 11:37:32
 Year: Existing
 Soft Site

NOISE LEVELS:

Level, dB Ldn

Segment	Distance	Offset	Autos	Med.Trk.	Hvy.Trk.	Total
46	100.0	0.0	54.5	48.3	51.3	56.8
47	100.0	0.0	53.5	47.4	50.3	55.9
48	100.0	0.0	60.1	53.9	56.9	62.4
49	100.0	0.0	54.8	48.6	51.6	57.1
50	100.0	0.0	55.5	53.7	60.1	62.0
51	100.0	0.0	54.9	53.1	59.5	61.5
52	100.0	0.0	53.6	51.8	58.2	60.2
53	100.0	0.0	52.9	51.1	57.5	59.4

FHWA Model RD-77-108: Brown-Buntin Associates, Inc.
 Calveno Emission Curves Run Date: 08-28-1992
 Project Number: 92-294 Run Time: 11:37:33
 Year: Existing
 Soft Site

NOISE CONTOURS:

Distance to Ldn Contour, in feet

Segment	Offset	----- Level, dB -----				
		75	70	65	60	55
1	0.0	26	56	121	261	562
2	0.0	24	52	112	241	518
3	0.0	25	54	116	249	537
4	0.0	26	56	121	260	560
5	0.0	27	58	124	267	576
6	0.0	26	55	119	255	550
7	0.0	29	63	135	292	628
8	0.0	45	97	208	449	967
9	0.0	48	104	224	483	1040
10	0.0	50	108	233	501	1080
11	0.0	58	124	268	578	1244
12	0.0	76	163	351	757	1630
13	0.0	30	65	140	302	651
14	0.0	28	61	130	281	605
15	0.0	25	54	116	251	541
16	0.0	22	47	101	217	467
17	0.0	20	44	95	204	439
18	0.0	18	39	84	180	388
19	0.0	12	27	58	124	268
20	0.0	16	35	75	162	349
21	0.0	14	31	66	142	307
22	0.0	11	23	49	106	229
23	0.0	9	20	44	95	204
24	0.0	8	17	37	80	173
25	0.0	7	15	32	68	147
26	0.0	7	16	35	74	160
27	0.0	8	17	36	78	168
28	0.0	8	17	36	78	168
29	0.0	5	11	23	50	109
30	0.0	5	12	25	54	116
31	0.0	17	38	81	174	376
32	0.0	17	37	80	172	371
33	0.0	6	14	30	64	137
34	0.0	7	16	34	73	157
35	0.0	14	30	64	138	297
36	0.0	14	30	64	138	297
37	0.0	7	15	33	71	154
38	0.0	8	18	38	83	178
39	0.0	17	36	77	166	359
40	0.0	21	45	97	210	452
41	0.0	22	47	101	217	469

FHWA Model RD-77-108: Brown-Buntin Associates, Inc.
 Calveno Emission Curves Run Date: 08-28-1992
 Project Number: 92-294 Run Time: 11:37:35
 Year: Existing
 Soft Site

NOISE CONTOURS:

Distance to Ldn Contour, in feet

Segment	Offset	----- Level, dB -----				
		75	70	65	60	55
42	0.0	11	24	52	112	242
43	0.0	9	20	43	92	199
44	0.0	10	21	45	98	211
45	0.0	6	13	29	62	133
46	0.0	6	13	29	62	133
47	0.0	5	11	25	53	114
48	0.0	15	31	67	145	313
49	0.0	6	14	30	64	139
50	0.0	14	29	63	137	294
51	0.0	12	27	58	125	269
52	0.0	10	22	48	103	221
53	0.0	9	20	43	92	198

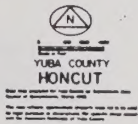
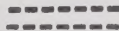


FIGURE 1
EXISTING
NOISE CONTOURS

60 dB L_{dn}

-  : Traffic
-  : Traffic
(Less than 75 feet)
-  : Railroad

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FIGURE 2
EXISTING
NOISE CONTOURS

60 dB L_{dn}

-  : Traffic
-  : Traffic
(Less than 75 feet)
-  : Railroad

BBA

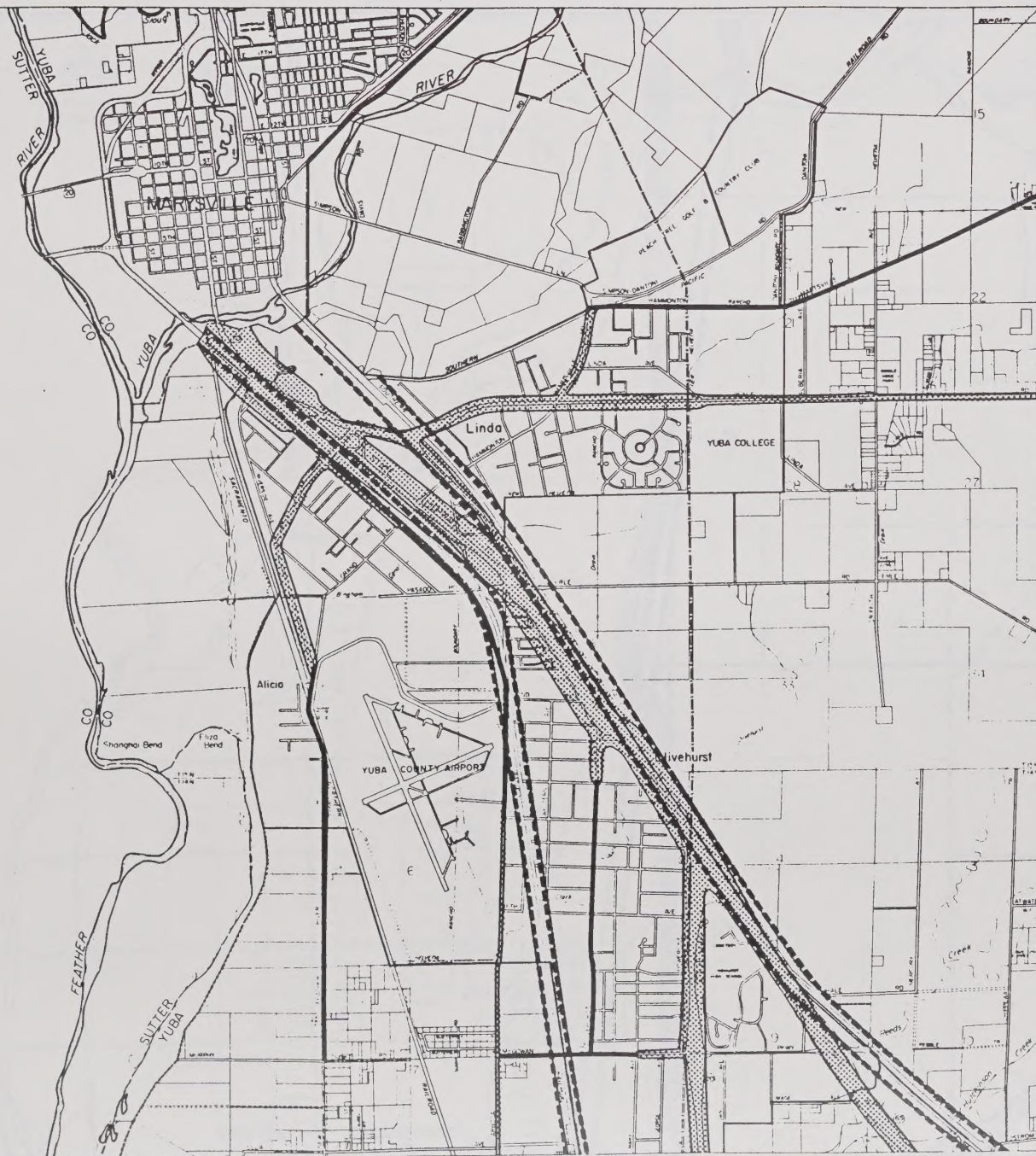
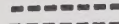


FIGURE 3
EXISTING
NOISE CONTOURS
60 dB L_{dn}

-  : Traffic
-  : Traffic
(Less than 75 feet)
-  : Railroad

BBA



FIGURE 4
EXISTING
NOISE CONTOURS

60 dB L_{dn}

-  : Traffic
-  : Traffic
(Less than 75 feet)
-  : Railroad

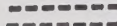
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 YUBA COUNTY
 RIO OSO

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FIGURE 5
 EXISTING
 NOISE CONTOURS
 60 dB L_{dn}

-  : Traffic
-  : Traffic
(Less than 75 feet)
-  : Railroad

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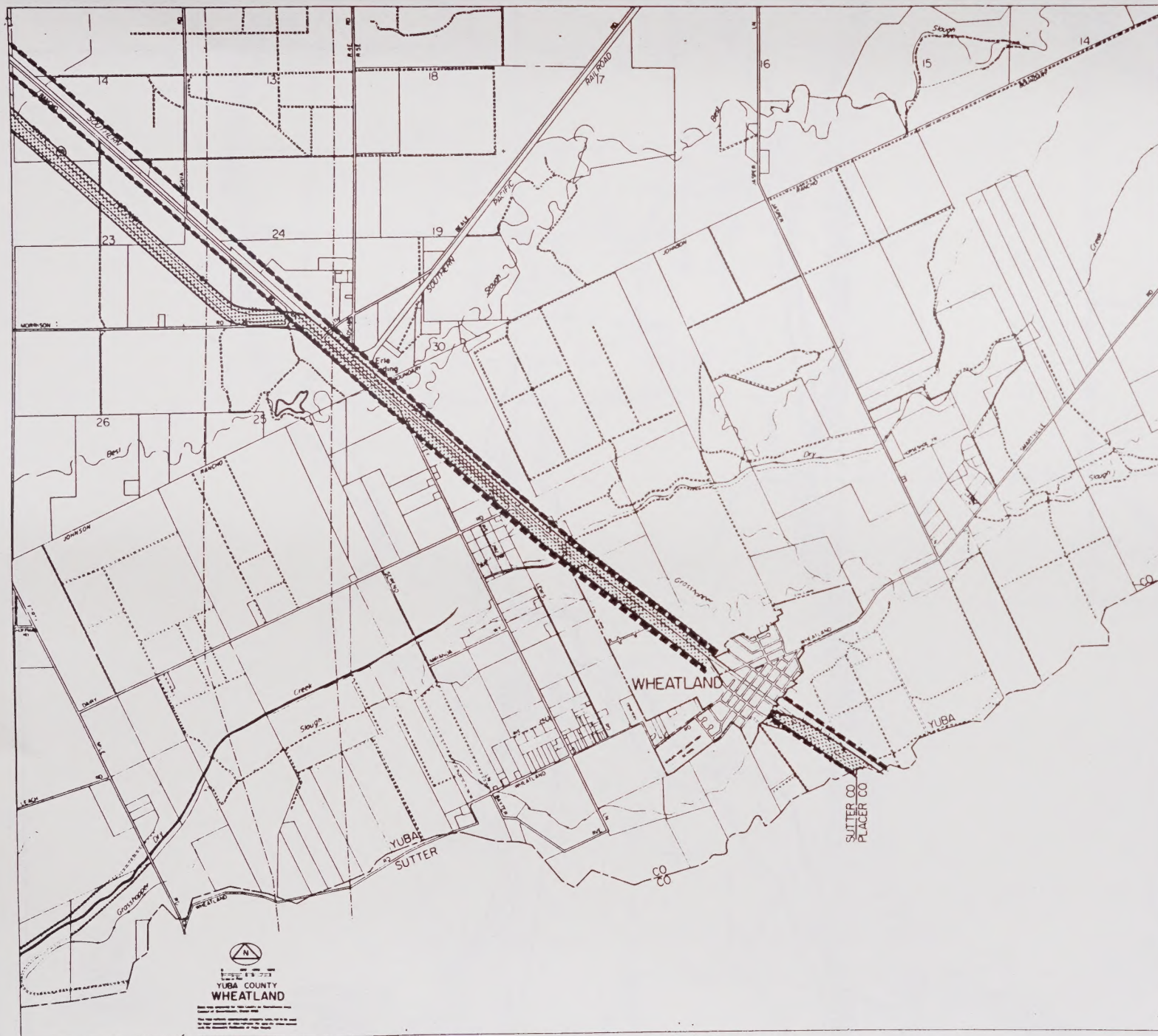
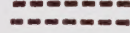
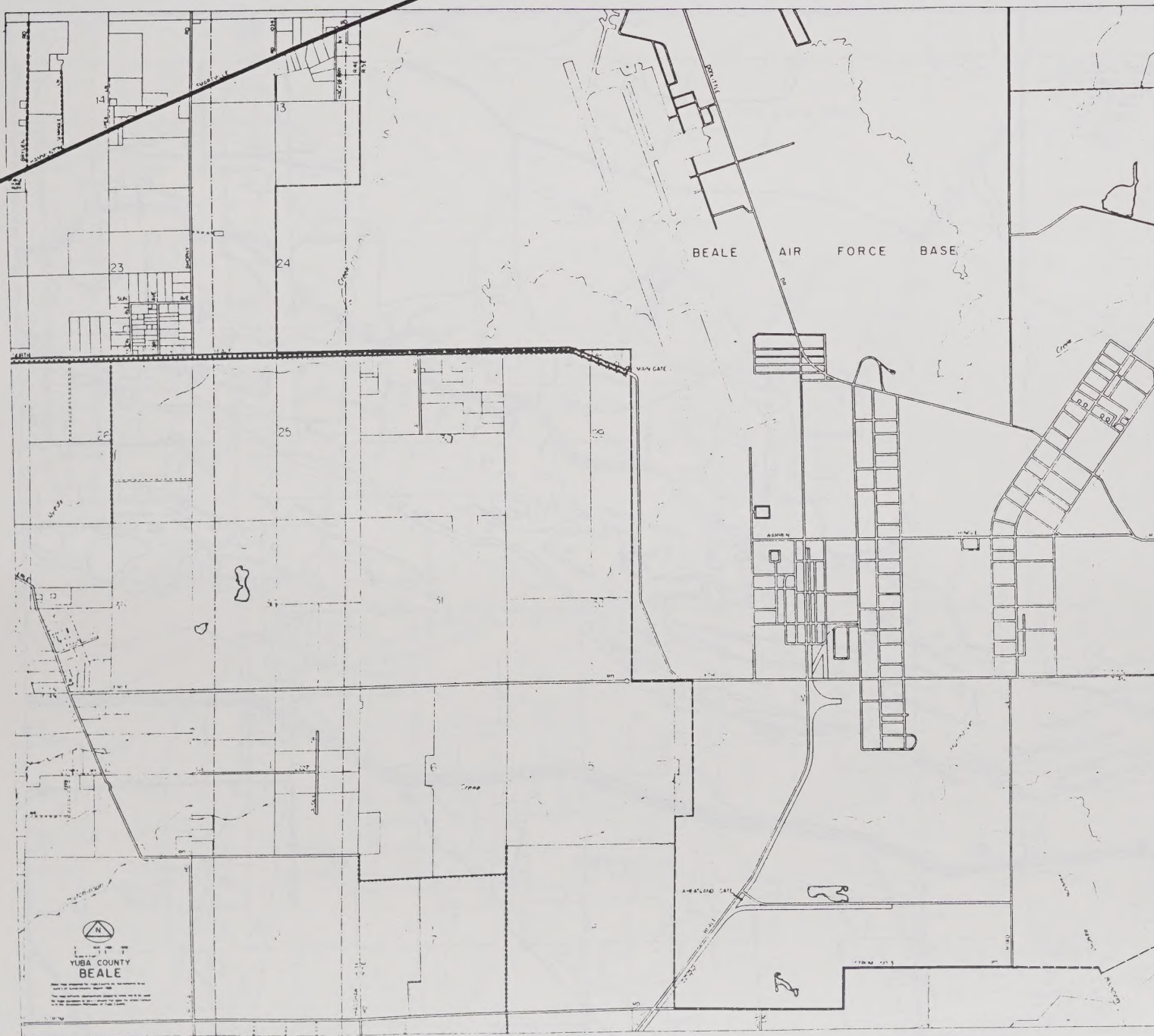


FIGURE 6
EXISTING
NOISE CONTOURS

60 dB L_{dn}

-  : Traffic
-  : Traffic
(Less than 75 feet)
-  : Railroad

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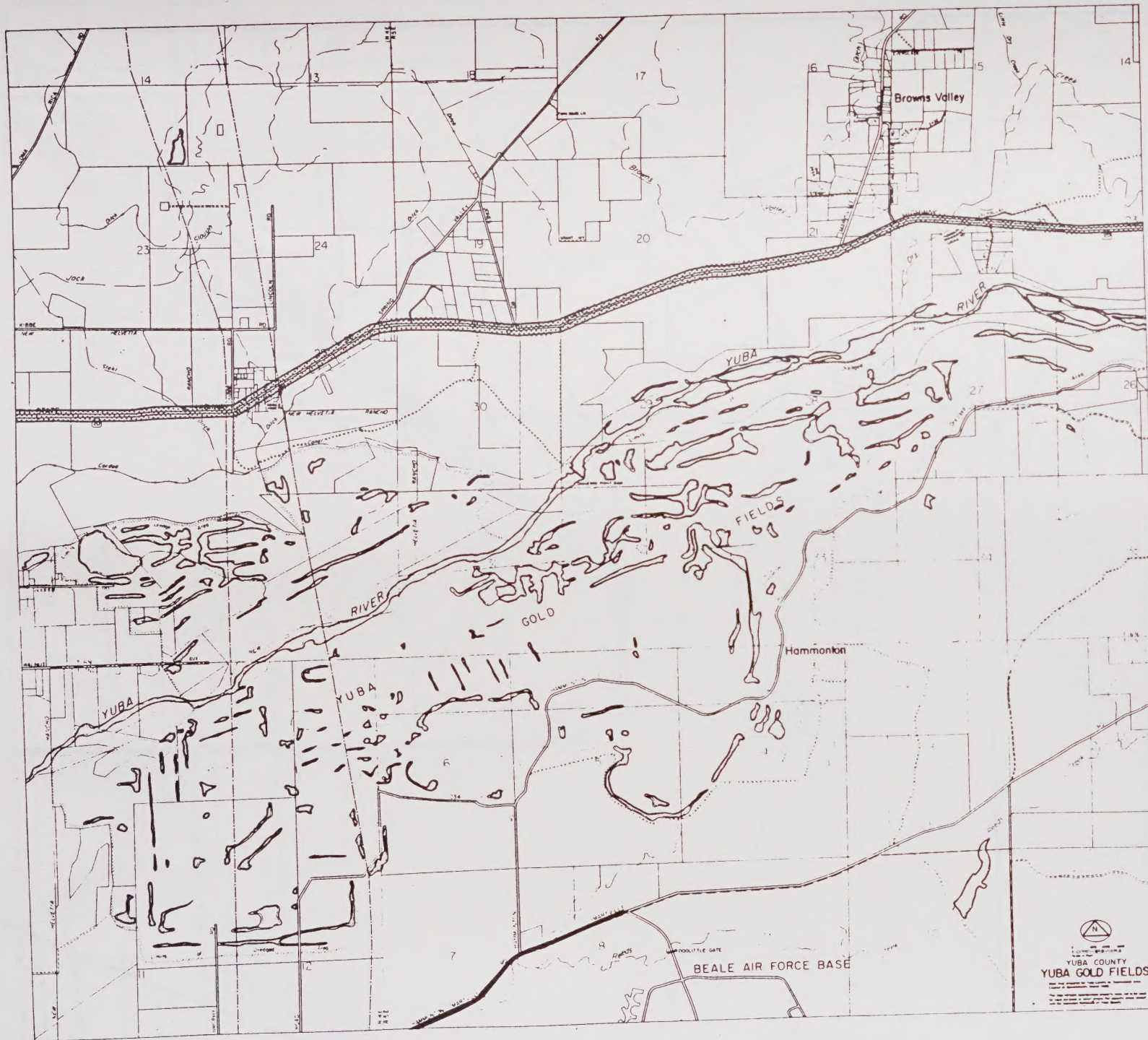


FIGURE 8
EXISTING
NOISE CONTOURS

60 dB L_{dn}

-  : Traffic
-  : Traffic
(Less than 75 feet)
-  : Railroad


 YUBA COUNTY
 YUBA GOLD FIELDS
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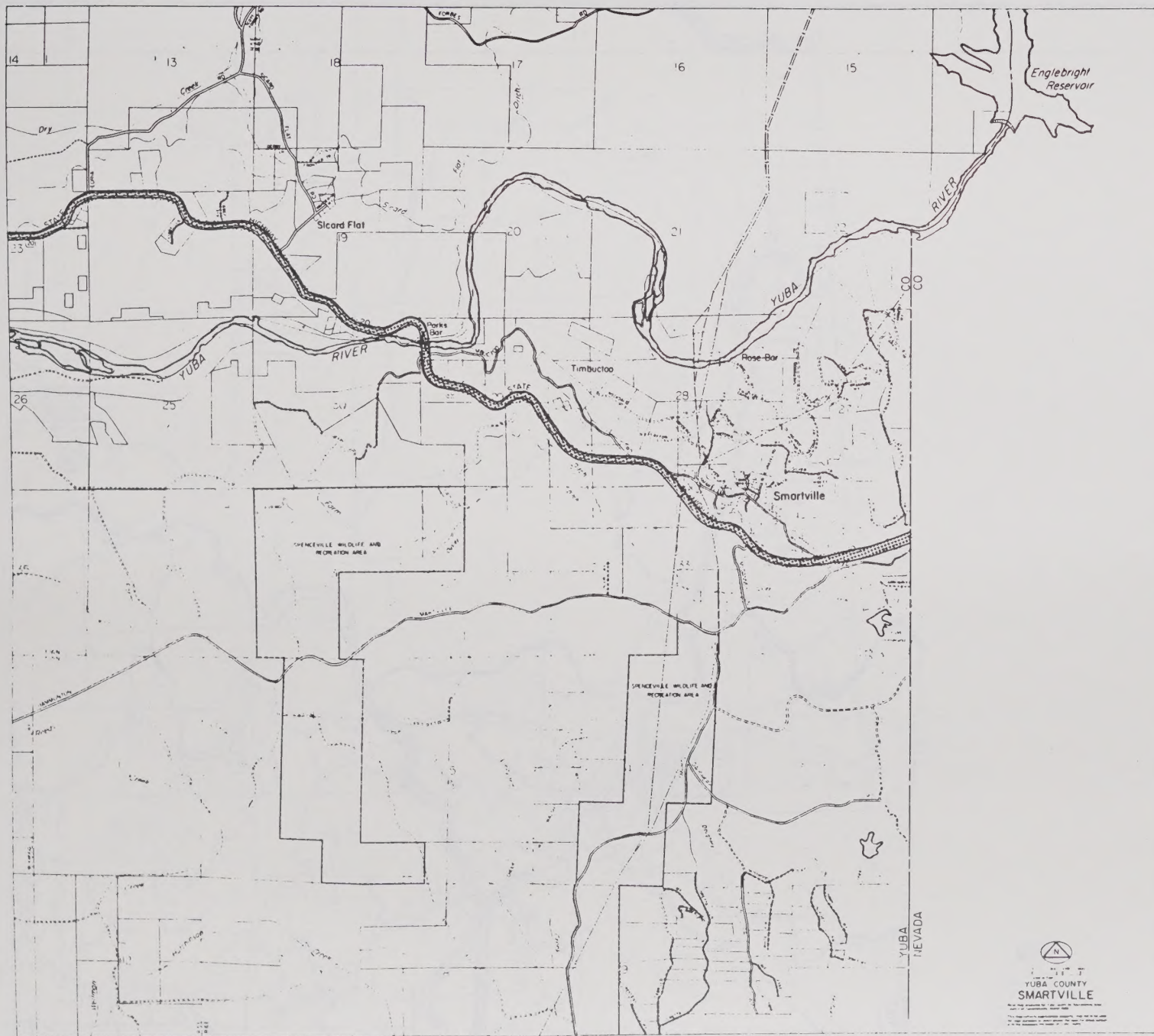
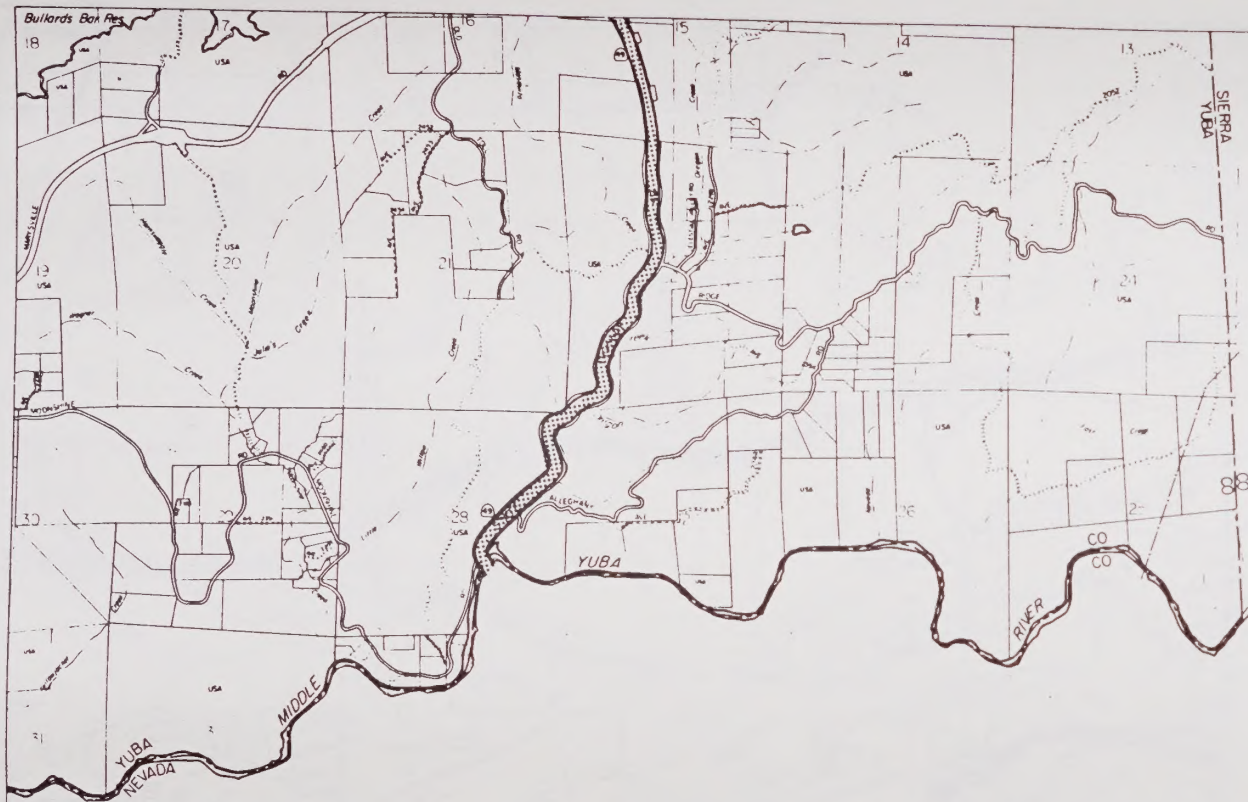


FIGURE 9
EXISTING
NOISE CONTOURS
 60 dB L_{dn}

[Solid Line] : Traffic
 [Dashed Line] : Traffic (Less than 75 feet)
 [Dotted Line] : Railroad

N
 1:10,000
 YUBA COUNTY
 SMARTVILLE
 1998

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 YUBA COUNTY
 MOONSHINE

FIGURE 10
 EXISTING
 NOISE CONTOURS

60 dB L_{dn}

-  : Traffic
-  : Traffic
(Less than 75 feet)
-  : Railroad

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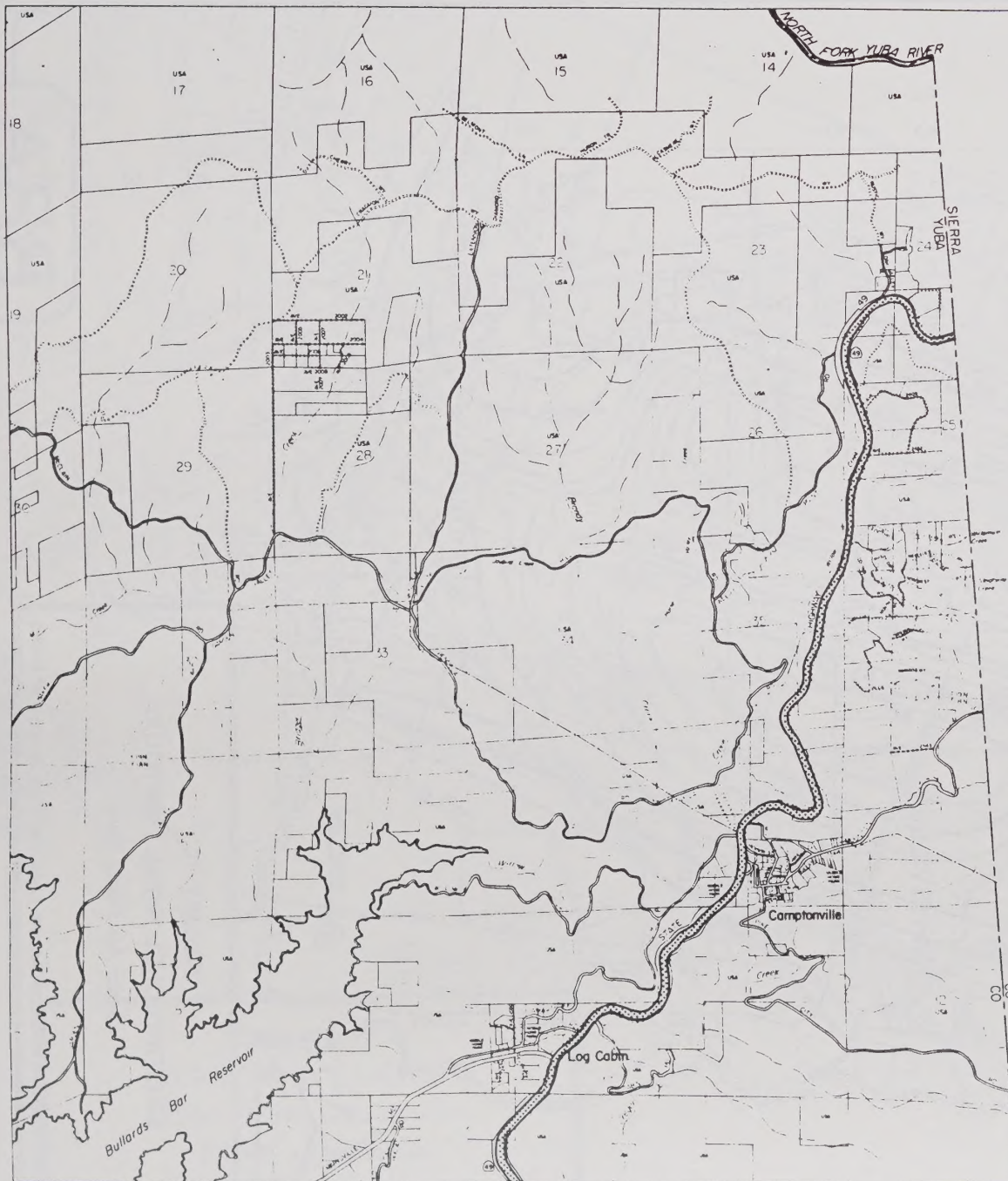
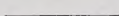
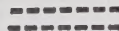


FIGURE 11
EXISTING
NOISE CONTOURS

60 dB L_{dn}

-  : Traffic
-  : Traffic
(Less than 75 feet)
-  : Railroad



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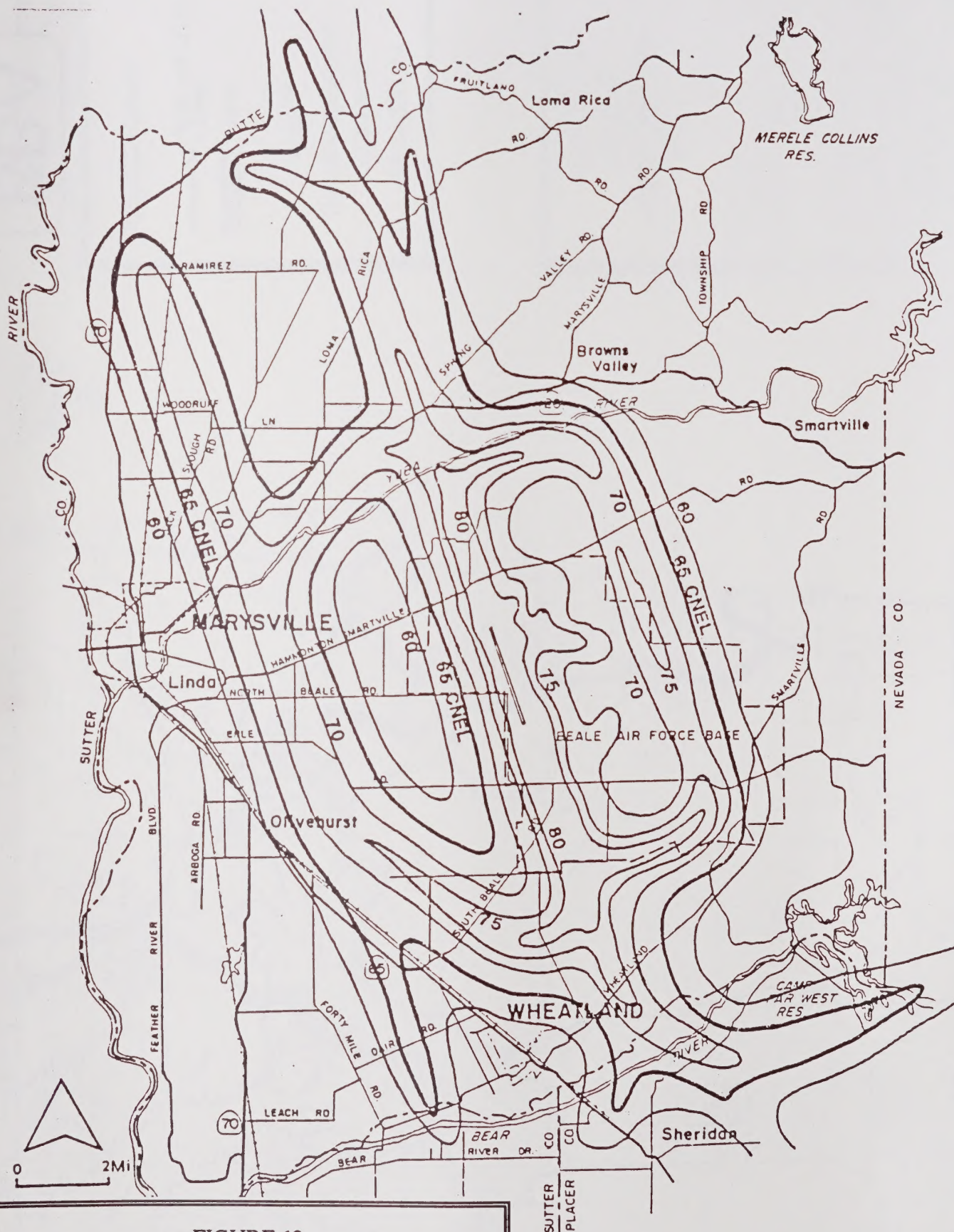


FIGURE 12
EXISTING CNEL NOISE CONTOURS
Beale Air Force Base

Source: Beale AFB Comprehensive Land Use Plan, September 1989

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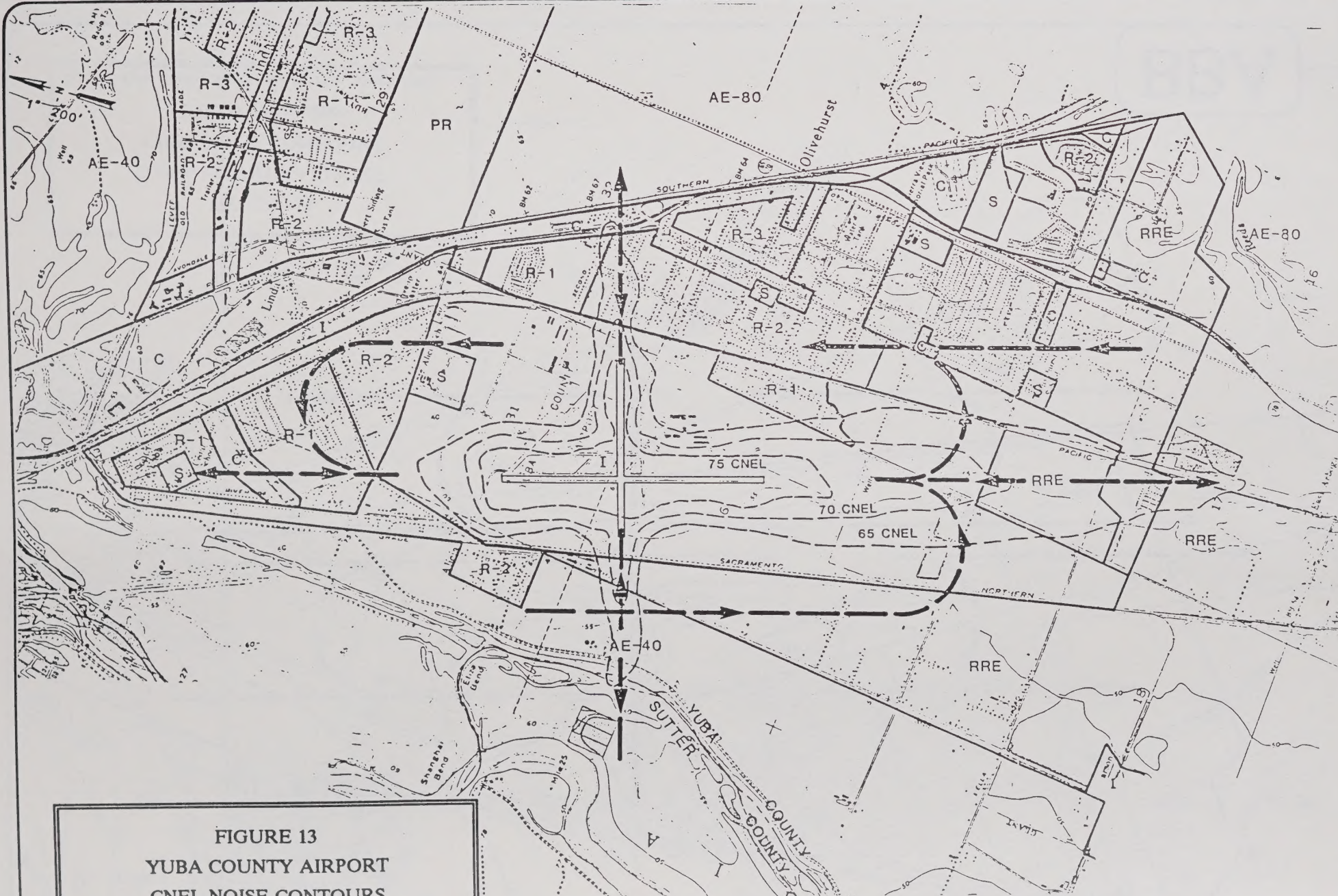


FIGURE 13
YUBA COUNTY AIRPORT
CNEL NOISE CONTOURS

200,000 + Operations

Source: Yuba County Airport Master Plan, March 1986

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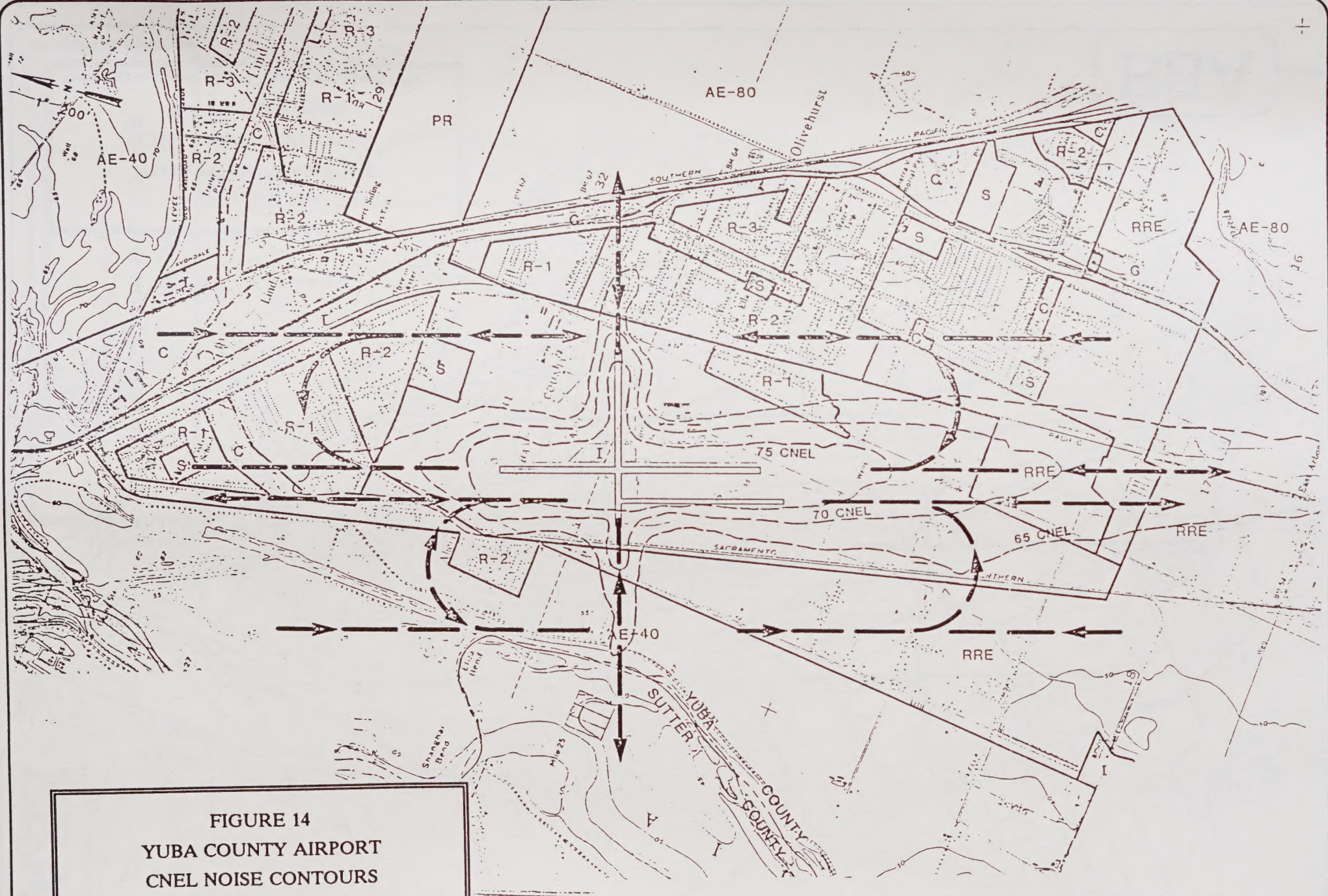


FIGURE 14
YUBA COUNTY AIRPORT
CNEL NOISE CONTOURS
130,000 Operations

Source: Yuba County Airport Master Plan, March 1986

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APPENDIX C

APPENDIX

INTERSECTION AND ROADWAY EVALUATION METHODOLOGY

Levels of Service - Methodology

To assess the quality of existing traffic conditions, Levels of Service were calculated for study area roadway segments and critical intersection locations throughout Yuba County. "Level of Service" (LOS) is a qualitative measure of traffic operating conditions whereby a letter grade, "A" through "F", corresponding to progressively worsening traffic operating conditions, is assigned to an intersection or roadway segment. The characteristics associated with the various Levels of Service are presented in Table A1. As shown in Table A1, LOS "A", "B" and "C" are considered satisfactory to most motorists, while LOS "D" is marginally acceptable. LOS "E" and "F" are associated with congestion and delay and are unacceptable to most motorists. Procedures used for calculating Levels of Service are contained in Transportation Research Board Circular 212 "Interim Materials on Highway Capacity" and the "1985 Highway Capacity Manual".

In general terms, Level of Service is calculated for an hour long traffic condition at a signalized intersection, unsignalized intersection or roadway segment. Twenty-four hour volumes are also utilized on roadway segments to define Levels of Service.

Signalized Intersections. Procedures used for calculating Levels of Service at signalized intersections are presented in Transportation Research Board Circular 212, "Interim Materials on Highway Capacity". Yuba County has established LOS "C" (i.e., $V/C = 0.80$) as an operational threshold beyond which mitigations are required.

Unsignalized Intersections. For unsignalized intersections, gap acceptance and reserve capacity are used for Level of Service analysis. Procedures used for calculating unsignalized intersection Level of Service are presented in the "1985 Highway Capacity Manual". Levels of Service at unsignalized intersections, which are controlled by side street stop signs, are indicative of the magnitude of the delay incurred by motorists turning at the intersection. Because these calculations ignore the condition of through traffic flow (which is assumed to flow freely) a supplemental traffic signal warrant analysis is performed.

While the unsignalized Level of Service may indicate very long delays (i.e., LOS "E") traffic conditions are generally not assumed to be unacceptable unless signal warrants are satisfied. Meeting signal warrants signifies that an intersection has unacceptable operating conditions, but it does not mean that installation of a signal is the only way to mitigate conditions. It is often

possible to improve an intersection with additional lanes or improved geometrics so that a signal is not necessary. The signal warrant criteria employed for this study are those presented in the "Manual of Uniform Traffic Control Devices" (MUTCD) published by the Federal Highway Commission.

Typically, the need for improvements at unsignalized intersections is determined by examining whether signal warrants are met based on peak hour warrants for signalization. If warrants are met, this is indicative of the fact that the delays which are experienced on the side street approach(es) are long enough, or a large enough volume of traffic is effected to warrant stopping the major street traffic.

TABLE A1
LEVEL OF SERVICE DEFINITIONS

LEVEL OF SERVICE	SIGNALIZED INTERSECTION	UNSIGNALIZED INTERSECTION	ROADWAY (DAILY)
"A"	Uncongested operations, all queues clear in a single-signal cycle. $V/C \leq 0.60$	Little or no delay. reserve capacity >400	Completely free flow.
"B"	Uncongested operations, all queues clear in a single cycle $V/C = 0.61-0.70$	Short traffic delays. reserve capacity 300-399	Free flow, presence of other vehicles noticeable.
"C"	Light congestion, occasional backups on critical approaches $V/C = 0.71-0.80$	Average traffic delays. reserve capacity 200-299	Ability to maneuver and select operating speed affected.
"D"	Significant congestions of critical approaches but intersection functional. Cars required to wait through more than one cycle during short peaks. No long queues formed. $V/C = 0.81-0.90$	Long traffic delays. reserve capacity 100-199	Speeds and ability to maneuver increasingly restricted.
"E"	Severe congestion with some long standing queues on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es) $V/C = 0.91-1.00$	Long traffic delays. significant congestion. reserve capacity 0-99	Near capacity, flow quite unstable.
"F"	Total breakdown, stop-and-go operation. $V/C > 1.00$	Very long delays during peak periods.	Forced flow, breakdown.

Sources: 1985 Highway Capacity Manual, Transportation Research Board (TRB) Special Report 209; V/C (volume to capacity) ratios ranges from TRB Circular 212.

Urban Roadway Segments. As previously mentioned, a Level of Service may also be calculated on a street or roadway segment. As for intersections, a letter grade "A" through "F", corresponding to progressively worsening operating conditions, is assigned to a roadway segment. In urban areas, Level of Service thresholds have been used which suggest the general volume of daily traffic which would normally produce the respective peak hour levels of service. Table A2 presents the characteristics associated with each LOS grade for urban roadway segments.

Rural Roadways and 2-Lane Highways. Level of Service criteria for two-lane highways addresses both mobility and accessibility concerns. The primary measures of service quality are percent time delay, speed, and capacity utilization. Traffic operations on two-lane, two-way highways are unique. Lane changing and passing are possible only in the face of oncoming traffic in the opposing lane. Passing demand increases rapidly as traffic volumes increase, while passing capacity in the opposing lane declines as volumes increase. Thus, unlike other types of uninterrupted flow facilities, on two-lane highways, normal traffic flow in one direction influences flow in the other direction. Motorists are forced to adjust their individual travel speed as volume increases and the ability to pass declines. In conjunction with this, terrain, shoulder width, percent heavy vehicles, and available access points are important considerations. Two traffic stream characteristics, average travel speed and percent time delay, are used as operational measures describing the quality of service provided to motorists on a two-lane roadway. Table A3 displays Level of Service criteria for 2-lane highways as presented in the 1985 Highway Capacity Manual. Evaluation criteria shown is applicable to "Mountainous" terrain. Similar criteria is available for roadways located in "Flat" and "Rolling" terrain.

The 1985 Highway Capacity Manual presents methodologies for calculating practical Capacity and Level of Service on rural two lane roads. These procedures account for the effects of physical features and traffic characteristics on average travel speed and delay. The resulting capacities and Levels of Service are expressed in terms of allowable vehicles per hour. The practical capacity of many rural roads can be quite high, as capacities of 1,500 to 2,200 Vehicle Per Hour (VPH) could be physically accommodated. However, traffic flow conditions at near capacity levels are very poor and are typically described as "stop and go" or "bumper to bumper" conditions. The number of vehicles that can be accommodated under satisfactory Levels of Service is much less. The maximum flow rate associated with Level of Service "C", the Yuba County standard, is generally in the range of 600 to 700 VPH on the major rural roads.

The assessment of capacity and Level of Service on 2-lane roads is also complicated by the fact that these roads are often too narrow to allow vehicles traveling in opposite directions to pass without slowing to use the shoulder and the design speed of the roadway may be much less than typically assumed for ideal "base" conditions . This "bottleneck" is not a significant problem when traffic volumes are very low, but as traffic increases with development, the delays incurred by motorists contribute to poor Levels of Service and reduced capacity. Similarly, existing roadways which exhibit relatively low design speeds (ie., 25-30 mph) may not theoretically be capable of providing a good Level of Service (ie., A to B) even though traffic volumes are relatively low.

Because the 1985 Highway Capacity Manual only addresses pavement sections greater than 18 feet in width, adjustments to the published procedures have been made to account for the narrow pavement sections in rural Yuba County. These adjustments account for the time lost as opposing vehicles pass, which is estimated at about 12 seconds per vehicle. The resulting reduction in overall capacity and Level of Service "C" service volume is equal to about 50% of the calculated value for 18 foot roads with like shoulders.

TABLE A2
EVALUATION CRITERIA FOR URBAN ROADWAYS
DAILY LEVEL OF SERVICE

Facility Type	LOS "C" ADT Volumes	LOS "D" ADT Volumes	LOS "E" ADT Volumes
<u>Urban Street</u>	<u>V/C 0.71 - 0.80</u>	<u>V/C 0.81 - 0.90</u>	<u>V/C 0.91 - 1.00</u>
Two Lane	10,700 - 12,000	12,000 - 13,500	13,500 - 15,000
Three Lane	14,200 - 15,950	15,950 - 17,950	17,950 - 19,950
Four Lane	21,300 - 24,000	24,000 - 27,000	27,000 - 30,000
Five Lane	28,300 - 31,900	31,900 - 35,900	35,900 - 39,900
Six Lane	32,000 - 36,000	36,000 - 40,500	40,500 - 45,000
Eight Lane	42,600 - 48,000	48,000 - 54,000	54,000 - 60,000

TABLE A3
LEVEL OF SERVICE CRITERIA FOR GENERAL TWO-LANE
HIGHWAY SEGMENTS

Level of Service	% Time Delay	Average ^b Speed	V/C Ratio ^a Mountainous Terrain					
			Percent No Passing Zones					
			0%	20%	40%	60%	80%	100%
A	<30	>56	0.14	0.09	0.07	0.04	0.02	0.01
B	<45	>54	0.25	0.20	0.16	0.13	0.12	0.10
C	<60	>49	0.39	0.33	0.28	0.23	0.20	0.16
D	<75	>45	0.58	0.50	0.45	0.40	0.37	0.33
E	>75	>35	0.91	0.87	0.84	0.82	0.80	0.78
F	100	<35	--	--	--	--	--	--

* Source: 1985 Highway Capacity Manual and Transportation Research Record #1194, Traffic Flow Theory and Highway Capacity.

a Ratio of flow rate to an ideal capacity of 2,800 pcph in both directions.

b Average travel speed of all vehicles (in mph) for highways with design speed > 60 mph; for highways with lower design speeds, reduce speed by 4 mph for each 10 mph reduction in design speed below (60) mph; assumes that speed is not restricted to lower values by regulations.



APPENDIX D

STATE OF CALIFORNIA HISTORIC PROPERTIES INVENTORY FOR YUBA COUNTY

Historic Record Search for: 0

BROWNSVILLE

PROPERTY NAME	STREET ADDRESS	INVENTORY.NUM. PROP.
HONCUT CREEK BRIDGE		5919-0002-0000 049351
RACKERBY BR, BR 16C-9	LA PORTE RD	5919-0001-0000 049350
NO MORE PROPERTIES IN THIS CITY!		

Historic Record Search for: 0

CAMPTONVILLE

PROPERTY NAME	STREET ADDRESS	INVENTORY.NUM. PROP.
OREGON CREEK COVERED BRIDGE, FREEMAN	SR 49	5922-0001-0000 049353
NO MORE PROPERTIES IN THIS CITY!		

Historic Record Search for: 0

CHALLENGE

PROPERTY NAME	STREET ADDRESS	INVENTORY.NUM. PROP.
WOODLEAF HOTEL	MARYSVILLE RD	5925-0001-0000 049355
NO MORE PROPERTIES IN THIS CITY!		

Historic Record Search for: 0

RACKERBY

PROPERTY NAME	STREET ADDRESS	INVENTORY.NUM. PROP.
RACKERBY STAGE STOP	7474 LA PORTE RD	067588
ROUZE STORE/POST OFFICE	0 LA PORTE RD	067589
NO MORE PROPERTIES IN THIS CITY!		

Historic Record Search for: 0

SMARTSVILLE

PROPERTY NAME	STREET ADDRESS	INVENTORY.NUM.	PROP.
CHURCH OF THE IMMACULATE CONCEPTION,	0 MAIN ST		072990
SUEY SING STORE, STEWART BROS. STORE	SR 20	5977-0001-0000	050133
PARKS BAR BRIDGE 16-11	0 SR 20		068310

NO MORE PROPERTIES IN THIS CITY!

Historic Record Search for: 0

WHEATLAND

PROPERTY NAME	STREET ADDRESS	INVENTORY.NUM.	PROP.
JOHNSON RANCH&BURTIS HOTEL SITE	0		073437
CHINESE AMERICAN CEMETERY	1ST ST	5692-0005-0000	046793
	401 4TH ST		073653
	98 D ST		077192
WHEATLAND MASONIC TEMPLE	400 FRONT ST		073724
HAIRDRESSING AND SHAVING SALOON, GEO	410 MAIN ST	5692-0007-0000	046795
	512 MAIN ST		076815
DURST HOP RANCH	0 S A ST		073062
DURST RANCH, BEAR RIVER HOP FARM	2009 SPENCEVILLE RD	5692-0006-0000	046794
BR 16-01	SR 65	5692-0001-0000	046790
BR 16-03	SR 65	5692-0003-0000	046791
WALDO BRIDGE/CABBAGE PATCH BRIDGE, B	WALDO RD	5692-0004-0000	046792
BRIDGE NO. 16C-6, HISTORIC TRUSS BRI	0 WALDO RD		069662

NO MORE PROPERTIES IN THIS CITY!

Historic Record Search for: 0

MARYSVILLE

PROPERTY NAME	STREET ADDRESS	INVENTORY.NUM.	PROP.
	814 10TH ST	5901-0259-0000	049321
	816 10TH ST	5901-0260-0000	049322
	818 10TH ST	5901-0261-0000	049323
W J DEMPSEY HOUSE	419 11TH ST	5901-0262-0000	049324
	719 11TH ST	5901-0263-0000	049325
YUBA CONSOLIDATED GOLD FIELDS, EARL	12TH ST	5901-0254-0000	049316
	416 13TH ST	5901-0264-0000	049326
	618 14TH ST		076636
MARYSVILLE HIGH SCHOOL	18TH ST	5901-0265-0000	049327
HIGH SCHOOL AUDITORIUM	18TH ST	5901-0266-0000	049328
CHINATOWN, HISTORIC CHINESE AMERICAN	1ST AND 2ND STS	5901-0255-9999	049317
PHOENIX RESTAURANT	223 1ST ST	5901-0002-0000	049042
CHINESE SCHOOL	226 1ST ST	5901-0003-0000	049043
KIM WING BUILDING	228 1ST ST	5901-0004-0000	049044

PROPERTY NAME	STREET ADDRESS	INVENTORY.NUM.	PROP.
MAMAS	415 4TH ST	5901-0077-0000	049117
	417 4TH ST	5901-0078-0000	049118
HART BUILDING, BROWN BLDG / NAGLER B	423 4TH ST	5901-0079-0000	049119
	825 4TH ST	5901-0091-0001	049131
KELLY HOUSE	901 4TH ST	5901-0091-0002	049132
KELLY COURT	903 4TH ST	5901-0091-0003	049133
KELLY COURT	907 4TH ST	5901-0091-0004	049134
KELLY COURT	915 4TH ST	5901-0091-0005	049135
KELLY COURT	917 4TH ST	5901-0091-0006	049136
KELLY COURT	921 4TH ST	5901-0091-0007	049137
KELLY COURT	927 4TH ST	5901-0091-0008	049138
WESTERN PACIFIC DEPOT, DEPOT	4TH ST	5901-0092-0000	049154
POWELL HOME	525 4TH ST	5901-0093-0000	049155
	531 4TH ST	5901-0094-0000	049156
TF OBRIAN HOUSE	608 4TH ST	5901-0095-0000	049157
EUREKA HOUSE, TRAVELERS CAFE	3RD ST	5901-0046-0000	049086
MCCOY HOUSE	121 3RD ST	5901-0063-0000	049103
LENNON HOUSE	123 3RD ST	5901-0064-0000	049104
SYVERTSEN HOUSE	124 3RD ST	5901-0065-0000	049105
OLD YUBA ENGINE HOUSE	205 3RD ST	5901-0066-0000	049106
REGGIS UPHOLSTERY	215 3RD ST	5901-0067-0000	049107
WICKS WILLERY HOTEL	227 3RD ST	5901-0068-0000	049108
SING CHONG/ ST GEORGE HOTEL	315 3RD ST	5901-0069-0000	049109
SCHNEIDERS MENS STORE ANNEX	323 3RD ST	5901-0070-0000	049110
SPRING HOUSE, CHISELERS INN	415 3RD ST	5901-0071-0000	049111
	411 3RD ST	5901-0076-0000	049116
PACKARD LIBRARY, MARYSVILLE YUBA COU	4TH ST	5901-0072-0000	049112
OLD MONTGOMERY WARD BUILDING, LAMON	4TH ST	5901-0073-0000	049113
GH ANTIQUES	408 4TH ST	5901-0074-0000	049114
	410 4TH ST	5901-0075-0000	049115
KIM BUILDING	230 1ST ST	5901-0005-0000	049045
	232 1ST ST	5901-0006-0000	049046
SUEY SING SOCIETY	305 1ST ST	5901-0007-0000	049047
LITTLE HARLEM	310 1ST ST	5901-0008-0000	049048
ESQUIRE CLUB CARD ROOM	314 1ST ST	5901-0009-0000	049049
TWIN CITIES RESCUE MISSION	315 1ST ST	5901-0010-0000	049050
MANUELS PLACE	316 1ST ST	5901-0011-0000	049051
REGIS HOTEL	320 1ST ST	5901-0012-0000	049052
CAROLINA ROOMS, TWIN CITIES RESCUE M	322 1ST ST	5901-0013-0000	049053
SENATOR HOTEL	324 1ST ST	5901-0014-0000	049054
GUADALAJARA CAFE/GRAND HOTEL	332 1ST ST	5901-0015-0000	049055
BOK KAI TEMPLE	3 1ST ST	5901-0027-0000	049067
CROWLEY HOUSE	117 2ND ST	5901-0016-0000	049056
WILSON HOUSE	123 2ND ST	5901-0017-0000	049057
GOLDEN WEST HOTEL	320 2ND ST	5901-0018-0000	049058
	609 4TH ST	5901-0096-0000	049158
TF OBRIAN	610 4TH ST	5901-0097-0000	049159
	615 4TH ST	5901-0098-0000	049160
EDGAR TABER HOUSE	614 4TH ST	5901-0099-0000	049161
DAVENPORT HOUSE	624 4TH ST	5901-0100-0000	049162
PACKARD LIBRARY, MARYSVILLE CITY LIB	301 4TH ST	5901-0278-0000	049340
BUD AND RAYS TEXACO, PUTMANS GIFTS	5TH ST	5901-0080-0000	049120
	119 5TH ST	5901-0081-0000	049121
SCHEN / CARLIN HOME, SPERBECK HOME	204 5TH ST	5901-0082-0000	049122
RICHARDSON HOUSE	210 5TH ST	5901-0083-0000	049123
MCCOY HOME, JOHN PEPPER HOUSE	214 5TH ST	5901-0084-0000	049124
THE HADLEY BUILDING	230 5TH ST	5901-0086-0000	049126
ARCO GAS STATION	303 5TH ST	5901-0087-0000	049127
HARNEY BLDG	317 5TH ST	5901-0088-0000	049128
MARYSVILLE HOTEL	424 5TH ST	5901-0089-0000	049129

PROPERTY NAME	STREET ADDRESS	INVENTORY.NUM.	PROP.
DELTA BLDG	425 5TH ST	5901-0090-0000	049130
	718 5TH ST	5901-0101-0000	049163
	722 5TH ST	5901-0102-0000	049164
	800 5TH ST	5901-0103-0000	049165
J W STEWARD	811 5TH ST	5901-0104-0000	049166
BEHTEL AMERICAN ME CHURCH, BETHEL AM	115 5TH ST	5901-0279-0000	049341
RAMIREZ CASTLE/THE MANSION/THE CASTL	220 5TH ST	5901-0276-0000	049338
HADLEY BUILDING	230 5TH ST		069663
	517 6TH ST	5901-0105-0000	049167
C L HEXTER	527 6TH ST	5901-0106-0000	049168
CHASE HOUSE	601 6TH ST	5901-0107-0000	049169
DON BRYANT	618 6TH ST	5901-0108-0000	049170
CELIA GOMEZ HOME	701 6TH ST	5901-0109-0000	049171
	707 6TH ST	5901-0110-0000	049172
	719 6TH ST	5901-0111-0000	049173
PEACOCK HOUSE	807 6TH ST	5901-0112-0000	049174
WILLIAM HAGGERTY	814 6TH ST	5901-0113-0000	049175
	817 6TH ST	5901-0114-0000	049176
	818 6TH ST	5901-0115-0000	049177
	819 6TH ST	5901-0116-0000	049178
J F SAVER HOUSE	825 6TH ST	5901-0117-0000	049179
R O CLEMENCE	829 6TH ST	5901-0118-0000	049180
WREN / ROSE HOUSE	909 6TH ST	5901-0119-0000	049181
LLOYD F LANE HOUSE	915 6TH ST	5901-0120-0000	049182
HAMPTON HOUSE	323 6TH ST	5901-0222-0000	049284
JOHNSON HOME	421 6TH ST	5901-0223-0000	049285
DAN BRYANT HOME	505 6TH ST	5901-0224-0000	049286
GUS SCHNEIDER HOME	509 6TH ST	5901-0225-0000	049287
	518 7TH ST	5901-0121-0000	049183
	530 7TH ST	5901-0122-0000	049184
	722 7TH ST	5901-0123-0000	049185
	728 7TH ST	5901-0124-0000	049186
E P MCDANIELS HOUSE	811 7TH ST	5901-0125-0000	049187
JULIO YARBROUGH HOUSE	824 7TH ST	5901-0126-0000	049188
	827 7TH ST	5901-0127-0000	049189
HAGGERTY HOUSE	830 7TH ST	5901-0128-0000	049190
	831 7TH ST	5901-0129-0000	049191
STASSIS FOURTH WARD TAVERN	102 7TH ST	5901-0226-0000	049288
	112 7TH ST	5901-0228-0000	049290
	116 7TH ST	5901-0229-0000	049291
	120 7TH ST	5901-0230-0000	049292
	220 7TH ST	5901-0231-0000	049293
PINK TRUNK	310 7TH ST	5901-0232-0000	049294
SHERMAN APT	316 7TH ST	5901-0233-0000	049295
SAMBORN / MCMURTY HOME, IMOGENE MCMU	329 7TH ST	5901-0234-0000	049296
MARY MENDE HOME, F E LANEY REALTOR O	411 7TH ST	5901-0235-0000	049297
OLD MANWELL HOUSE	412 7TH ST	5901-0236-0000	049298
	419 7TH ST	5901-0237-0000	049299
	417 7TH ST	5901-0238-0000	049300
EKHARDT HOME, WALTER LEWIS HOME	415 7TH ST	5901-0239-0000	049301
MOONEY HOUSE	526 8TH ST	5901-0130-0000	049192
ELIZABETH CONRATH HOUSE, CONRATH HOU	603 8TH ST	5901-0131-0000	049193
GEORGE HERBOTH	605 8TH ST	5901-0132-0000	049194
E E SCOTT HOUSE	611 8TH ST	5901-0133-0000	049195
TOM CUMISKEY HOUSE	615 8TH ST	5901-0134-0000	049196
J C LYND HOUSE	619 8TH ST	5901-0135-0000	049197
J H CASTO HOUSE	623 8TH ST	5901-0136-0000	049198
LE BOURIAN HOUSE	629 8TH ST	5901-0137-0000	049199
WALDO JOHNSON HOUSE	631 8TH ST	5901-0138-0000	049200
	714 8TH ST	5901-0139-0000	049201

PROPERTY NAME	STREET ADDRESS	INVENTORY.NUM.	PROP.
ARTHUR GLUCKMAN HOUSE	716 8TH ST	5901-0140-0000	049202
G E MCDANIELS HOUSE	723 8TH ST	5901-0141-0000	049203
MAE LA ROSE JONES HOME	727 8TH ST	5901-0142-0000	049204
RAY MANWELL HOUSE	731 8TH ST	5901-0143-0000	049205
MARY DIVER	215 8TH ST	5901-0240-0000	049302
	317 8TH ST	5901-0241-0000	049303
GEORGE LADAS HOME	319 8TH ST	5901-0242-0000	049304
1ST METHODIST EPISCOPAL CHURCH	414 8TH ST	5901-0243-0000	049305
DORA FETROW HOUSE	418 8TH ST	5901-0244-0000	049306
EUREKA STEAMER #1	9TH ST	5901-0245-0000	049307
MUNICIPAL SWIMMING POOL, BOY SCOUT B	9TH ST	5901-0258-0000	049320
	209 B ST	5901-0030-0000	049070
	222 B ST	5901-0031-0000	049071
WISCONSIN HOTEL, NICOLETTIS RESTAURA	229 B ST	5901-0032-0000	049072
	307 B ST	5901-0033-0000	049073
BECKER HOUSE	309 B ST	5901-0034-0000	049074
BARTH HOUSE	315 B ST	5901-0035-0000	049075
	319 B ST	5901-0036-0000	049076
	321 B ST	5901-0037-0000	049077
	322 B ST	5901-0038-0000	049078
	326 B ST	5901-0039-0000	049079
COUGLAN HOUSE	329 B ST	5901-0040-0000	049080
UNION LUMBER COMPANY	401 B ST	5901-0041-0000	049081
	415 B ST	5901-0042-0000	049082
	417 B ST	5901-0043-0000	049083
	423 B ST	5901-0044-0000	049084
	505 B ST	5901-0045-0000	049085
	624 B ST	5901-0194-0000	049256
	622 B ST	5901-0195-0000	049257
49ER CAFE	101 C ST	5901-0019-0000	049059
MAMAS PLACE	105 C ST	5901-0020-0000	049060
G & M FISH MARKET	107 C ST	5901-0021-0000	049061
	112 C ST	5901-0022-0000	049062
HOP SING SOCIETY	109 C ST	5901-0023-0000	049063
	120 C ST	5901-0024-0000	049064
JOES #2	213 C ST	5901-0025-0000	049065
TWIN CITIES POULTRY	215 C ST	5901-0026-0000	049066
NAKAGAWA MARKET	306 C ST	5901-0047-0000	049087
WING HING LAUNDRY	308 C ST	5901-0048-0000	049088
	310 C ST	5901-0049-0000	049089
JOE WAUGH HOUSE	316 C ST	5901-0050-0000	049090
UNITED STATES POST OFFICE	407 C ST	5901-0051-0000	049091
MARYSVILLE CITY HALL	526 C ST	5901-0052-0000	049092
DELPERO HOME	722 C ST	5901-0196-0000	049258
ESTHER SULLIVAN HOME	720 C ST	5901-0197-0000	049259
	718 C ST	5901-0198-0000	049260
SAINT JOES, ST JOSEPHS CATHOLIC CHUR	702 C ST	5901-0199-0000	049261
LIM / DIPPLE BUILDING	630 C ST	5901-0200-0000	049262
	629 C ST	5901-0201-0000	049263
	628 C ST	5901-0202-0000	049264
ARP / MANNIX HOUSE	625 C ST	5901-0203-0000	049265
POWELL HOUSE	624 C ST	5901-0204-0000	049266
SIMON FISHER HOUSE	623 C ST	5901-0205-0000	049267
DALTON HOUSE	617 C ST	5901-0206-0000	049268
DALTON HOUSE	615 C ST	5901-0207-0000	049269
	1604 C ST	5901-0246-0000	049308
	1713 C ST	5901-0247-0000	049309
US POST OFFICE	407 C ST		069665
PACKARD LIBRARY	401 C ST		073947
OKIMOTO HOUSE	7 D ST	5901-0028-0000	049068

PROPERTY NAME	STREET ADDRESS	INVENTORY.NUM.	PROP.
ROBINSONS PAINT STORE	113 D ST	5901-0029-0000	049069
ODD FELLOWS BUILDING, SCHNIEDERS MEN	301 D ST	5901-0053-0000	049093
LARRYS BUSINESS MACHINE	321 D ST	5901-0054-0000	049094
RUBELS DRUG STORE	320 D ST	5901-0055-0000	049095
IRENES CATERING	325 D ST	5901-0056-0000	049096
WATER WORKS	329 D ST	5901-0057-0000	049097
BARBARA SLIGAR HOME	829 D ST	5901-0208-0000	049270
W B SWAIN HOME, ROBERT AYERS HOME	803 D ST	5901-0209-0000	049271
1ST METHODIST CHURCH, 1ST UNITED MET	724 D ST	5901-0210-0000	049272
NORMAN ABBOTT RIDEOUT HOME, FRANK AA	710 D ST	5901-0211-0000	049273
MARY AARON HOUSE, MARY AARON MUSEUM	704 D ST	5901-0212-0000	049274
LYNN APARTMENTS, LYNN SMITH APARTMEN	632 D ST	5901-0213-0000	049275
STEPHEN J FIELD HOUSE	630 D ST	5901-0214-0000	049276
FORBES HOUSE	618 D ST	5901-0215-0000	049277
MARIE COUNTRYMAN HOUSE	613 D ST	5901-0216-0000	049278
C A BARNES HOUSE	611 D ST	5901-0217-0000	049279
CAMBERWELL MANOR	601 D ST	5901-0218-0000	049280
JENNIE KENNESON HOUSE	1227 D ST	5901-0227-0000	049289
WILLIAM DUANE	1113 D ST	5901-0248-0000	049310
W H LEHMAN	1120 D ST	5901-0249-0000	049311
FRED KENNESON HOUSE	1226 D ST	5901-0250-0000	049312
DECKER JEWETT BANK SITE, LOS AMIGOS	1129 D ST	5901-0251-0000	049313
ELLIS BLDG SITE, YAMAHA BLDG SITE	212 D ST	5901-0269-0000	049331
	100 D ST	5901-0270-0000	049332
	1227 D ST		069245
LIBERTY THEATER, TOWER THEATER	103 D ST	5901-0271-0000	049333
FORESTERS HALL	325 E ST	5901-0058-0000	049098
GALINS FURNITURE STORE	420 E ST	5901-0059-0000	049099
STATE THEATRE	515 E ST	5901-0060-0000	049100
	518 E ST	5901-0061-0000	049101
PGE OFFICE BUILDING	530 E ST	5901-0062-0000	049102
	616 E ST	5901-0144-0000	049206
	620 E ST	5901-0145-0000	049207
FIRST CHURCH CHRIST SCIENTIST	630 E ST	5901-0146-0000	049208
	720 E ST	5901-0147-0000	049209
	722 E ST	5901-0148-0000	049210
	726 E ST	5901-0149-0000	049211
	730 E ST	5901-0150-0000	049212
KETZNER	605 E ST	5901-0219-0000	049281
DIVVER APT	611 E ST	5901-0220-0000	049282
	612 E ST	5901-0221-0000	049283
	615 F ST	5901-0151-0000	049213
	621 F ST	5901-0152-0000	049214
	627 F ST	5901-0153-0000	049215
NORMAN DUNNING RIDEOUT HOUSE	707 F ST	5901-0154-0000	049216
HEFFMAN HOUSE	725 F ST	5901-0155-0000	049217
E A FORBES HOUSE	1112 F ST	5901-0252-0000	049314
E A FORBES HOUSE	1120 F ST	5901-0253-0000	049315
	523 G ST	5901-0156-0000	049218
ELDIN BRYANT HOUSE	527 G ST	5901-0157-0000	049219
	612 G ST	5901-0158-0000	049220
	614 G ST	5901-0159-0000	049221
	630 G ST	5901-0160-0000	049222
FALL HOME, FALL CHEIM HOME	706 G ST	5901-0161-0000	049223
	720 G ST	5901-0162-0000	049224
CHASE RESIDENCE	724 G ST	5901-0163-0000	049225
WALDO JOHNSON HOUSE	800 G ST	5901-0164-0000	049226
L P FARRIS HOUSE	810 G ST	5901-0165-0000	049227
L P FARRIS HOUSE	814 G ST	5901-0166-0000	049228
S O GUNNING	821 G ST	5901-0167-0000	049229

PROPERTY NAME	STREET ADDRESS	INVENTORY.NUM.	PROP.
A A KIMBALL HOUSE	828 G ST	5901-0168-0000	049230
J O PALM HOUSE	910 G ST	5901-0169-0000	049231
CHURCHILL/FINLEY HOUSE, FINLEY HOUSE	1030 G ST	5901-0277-0000	049339
RALPH PALM HOUSE	912 G ST	5901-0170-0000	049232
	1057 GRAND AVE		076638
	422 H ST	5901-0171-0000	049233
W P STUART HOUSE	510 H ST	5901-0172-0000	049234
JAMES BROWN HOUSE	514 H ST	5901-0173-0000	049235
OLD CARLIN HOME	528 H ST	5901-0174-0000	049236
	530 H ST	5901-0175-0000	049237
PEACOCK HOME	622 H ST	5901-0176-0000	049238
	625 H ST	5901-0177-0000	049239
	626 H ST	5901-0178-0000	049240
	715 H ST	5901-0179-0000	049241
HALL HOUSE	719 H ST	5901-0180-0000	049242
BENNETT HOUSE	804 H ST	5901-0181-0000	049243
CATHERINE BENNETT HOUSE	810 H ST	5901-0182-0000	049244
DELLA PIERRAT HOME	822 H ST	5901-0183-0000	049245
	926 H ST	5901-0184-0000	049246
	930 H ST	5901-0185-0000	049247
SMITH, F E, KELLY COURT	414 I ST	5901-0091-0009	049139
ALEXANDER HOUSE	416 I ST	5901-0091-0010	049140
SAUNDER HOUSE	424 I ST	5901-0091-0011	049141
	409 I ST	5901-0186-0000	049248
	509 I ST	5901-0187-0000	049249
	515 I ST	5901-0188-0000	049250
ROBINSON HOUSE	518 I ST	5901-0189-0000	049251
	522 I ST	5901-0190-0000	049252
	528 I ST	5901-0191-0000	049253
MARY HAGGERTY HOUSE	609 I ST	5901-0192-0000	049254
MILLER HOUSE	626 I ST	5901-0193-0000	049255
KELLY COURT	417 J ST	5901-0091-0012	049142
KELLY COURT	419 J ST	5901-0091-0013	049143
	415 J ST	5901-0091-0020	049150
KELLY COURT	J ST	5901-0091-9999	049153
FORMERLY CHINATOWN, MARYSVILLE NIHON	OAK ST	5901-0274-9999	049336
COLLINS, HARRY	409 PINE ST	5901-0091-0014	049144
JOHN GIBLIN	413 PINE ST	5901-0091-0015	049145
LILLIAN DOLL HOUSE, DOLL HOUSE	418 PINE ST	5901-0091-0016	049146
SMITHENBAUK HOUSE	422 PINE ST	5901-0091-0017	049147
HERMAN ARP HOUSE	423 PINE ST	5901-0091-0018	049148
MATT ARNOLDY HOUSE	430 PINE ST	5901-0091-0019	049149
HOUGHTON HOUSE	419 PINE ST	5901-0091-0021	049151
CURTS HOUSE	427 PINE ST	5901-0091-0022	049152
GIANELLA BR, BR 16C-2	RAMIREZ RD	5901-0273-0000	049335
POGUE/GIBBONS	1129 RAMIREZ ST	5901-0275-0000	049337
OLD TRACKER ORGAN	SAMPSON ST	5901-0268-0000	049330
CITY / CATHOLIC CEMETERY, OLD CITY C	SR 70	5901-0267-0000	049329
BR 16-18	SR 70	5901-0272-0000	049334
MARSVILLE LEVEES	YUBA RIVER	5901-0001-9999	049041
	1314 YUBA ST	5901-0256-0000	049318
LARS NELSON HOUSE	1600 YUBA ST	5901-0257-0000	049319

NO MORE PROPERTIES IN THIS CITY!

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